

Nuclear Waste

Introduction

For over three decades, the Government has been unable to decide how to deal with radioactive waste in the UK.¹ The history of Government schemes goes back as far as 1976 when eight sites were first selected for an underground dump.

The Government's latest review of policy – known as the “Managing Radioactive Waste Safely” process – looked, for a brief period, as though it might work, having been based for the first time on intensive public consultation with no pre-ordained plan for a deep dump. But since the beginning of 2007 things have begun to unravel. In June 2007, the House of Lords Science and Technology Committee called proposals “incoherent and opaque”.² And in an unprecedented move, the Scottish Government refused to endorse the process.³

Nirex failure

In the autumn of 1994, the UK's waste management agency at the time, Nirex, submitted a planning application to build a so-called Rock Characterisation Facility (RCF) near Sellafield in Cumbria. A public inquiry was held lasting five months up to 1st February 1996. Then, just prior to the 1997 General Election, the Conservative Secretary of State for the Environment John Gummer rejected the planning application because of “*scientific uncertainties and technical deficiencies in the proposals*”. So after over 15 years of work and an expenditure of around half a billion of taxpayer's money, the search for a lasting solution to the nuclear waste problem was back to square one.

When Labour won the May 1997 General Election, nuclear waste was probably the most intractable problem John Prescott found in his in-tray on arrival at the Environment Department. He was confronted with the need for a completely new policy following the disarray left by the rejection of Nirex's plans. This “*inevitably meant that there was a need for a period of reflection*”.⁴

Emphasis on consultation

‘Managing Radioactive Waste Safely’ – the Government's consultation document on how to develop its policy – was published in September 2001.⁵ This consultation, unlike any previous consultation on nuclear waste, did not “endorse any particular management option”. The consultation lasted six months and used some interesting new techniques such as focus groups and ‘stakeholder dialogue’. Then in July 2002 the Government announced it was going to establish a new independent committee to review options for managing radioactive waste and

¹ See the History of Nuclear Waste Disposal Proposals In Britain
http://www.no2nuclearpower.org.uk/reports/waste_disposal.php

² Radioactive Waste Management: An Update, House of Lords Science and Technology Committee, June 2007. <http://www.publications.parliament.uk/pa/ld200607/ldselect/ldsctech/109/109.pdf>

³ Nuclear Engineering International 25th June 2008.
<http://www.neimagazine.com/story.asp?sectioncode=132&storyCode=2045263>
Scottish Government Press Release 25th June 2008
<http://www.scotland.gov.uk/News/Releases/2007/06/25101822>

⁴ The Government's response to the House of Lords Select Committee on Science and Technology Report on the Management of Nuclear Waste, 25th October 1999.
<http://www.environment.detr.gov.uk/radioactivity/govtresponse/lords/index.htm>

⁵ Managing Radioactive Waste Safely: Proposals for developing a policy for managing solid radioactive waste in the UK, DEFRA et al, September 2001.
http://www.sepa.org.uk/pdf/radioactivity/publications/E_Managing_Radioactive_Waste_Safely.pdf

make recommendations. The Committee on Radioactive Waste Management (CoRWM) was to ensure that its work was carried out in an open, transparent and inclusive manner that engaged the public and provided an opportunity to express views.

After three years' deliberation, and perhaps the most extensive consultation exercise ever carried out, CoRWM made its recommendations to the Government in July 2006.⁶ It recommended that geological disposal of nuclear waste was the best option available within the present state of knowledge, and that there should be a new approach to implementation of a deep disposal policy, based on the willingness of local communities to participate.

Advisers ignored

However, CoRWM also made important recommendations which the Government has ignored. For instance, because of the uncertainties surrounding the implementation of geological disposal, it recommended that there should be a major research and development programme on both geological disposal and robust interim storage, and a security review of waste stores to see if they could survive a terrorist attack. Interim storage could be needed for at least 100 years, and there is a risk the repository programme will be delayed or fail. A year later, the then CoRWM chair, Gordon Mackerron reported relatively little visible progress in this area.⁷

The Government's response⁸ to CoRWM accepted what it saw as the solution to the nuclear waste problem - deep geological disposal - but it did little to address the important prerequisites that CoRWM had called for. Perhaps most importantly, the Government also failed to make clear that CoRWM's recommendations dealt only with legacy waste. CoRWM said it takes no position on the desirability or otherwise of nuclear new build, but that such decisions "...should be subject to their own public assessment process [because they] raise different political and ethical issues when compared with the consideration of wastes which already exist". The Committee also noted that the prospect of a new nuclear programme might undermine support for the Managing Radioactive Waste Safely process.⁹

CoRWM specifically said it did not want its recommendations seized upon as providing a green light for new build – yet that is exactly what the Government has been doing. CoRWM warned that new build waste would extend the time-scales for implementation, possibly for very long but essentially unforeseeable future periods.

After a legal challenge by Greenpeace in the High Court to the Government's consultation on plans for new reactors, Mr Justice Sullivan said in February 2007, the consultation was "*seriously flawed*" and the process "*manifestly inadequate and unfair.*" He said the Government's Energy Review consultation document was "*seriously misleading as to*

⁶ Managing our Radioactive Waste Safely: CoRWM's recommendations to Government, CoRWM, July 2006. <http://www.corwm.org.uk/Pages/Current%20Publications/700%20-%20CoRWM%20July%202006%20Recommendations%20to%20Government.pdf>

⁷ Future R&D Needs, by Gordon MacKerron, CoRWM, June 2007. [http://www.corwm.org.uk/Pages/Archived%20Publications/Tier%202%20\(4\)%20-%20Making%20decisions/Tier%203%20-%20Scoring%20and%20sensitivity%20testing/2209%20-%20Future%20RandD%20needs.doc](http://www.corwm.org.uk/Pages/Archived%20Publications/Tier%202%20(4)%20-%20Making%20decisions/Tier%203%20-%20Scoring%20and%20sensitivity%20testing/2209%20-%20Future%20RandD%20needs.doc)

⁸ Response to the report and recommendations from the Committee on Radioactive Waste Management, DEFRA et al, October 2006 <http://www.defra.gov.uk/environment/radioactivity/waste/pdf/corwm-govresponse.pdf>

⁹ CoRWM statement on new nuclear build, March 2006. [http://www.corwm.org.uk/Pages/Archived%20Publications/Tier%202%20\(6\)%20-%20Reporting/Tier%203%20-%20Other%20reporting/1593%20-%20CoRWM%20statement%20on%20new%20nuclear%20build.pdf](http://www.corwm.org.uk/Pages/Archived%20Publications/Tier%202%20(6)%20-%20Reporting/Tier%203%20-%20Other%20reporting/1593%20-%20CoRWM%20statement%20on%20new%20nuclear%20build.pdf)

CoRWM's position on waste from nuclear new build". CoRWM then re-stated its position. In no sense, CoRWM says, should its position be read as providing any solution to the long-term management of any wastes arising from a new build programme.¹⁰ "CoRWM's proposals apply only to committed wastes ... a new process will be required to examine and justify any proposals for the management of wastes arising from new build".

Tim Jackson of the Sustainable Development Commission accused the government of flouting its expert advice. "The political and ethical issues raised by the creation of more wastes are quite different from those relating to committed - and therefore unavoidable - wastes". Jackson says "we have an overriding moral obligation to mitigate the risk to future generations".¹¹

The Labour Government's first Energy White Paper in 2003 said there were "important issues of nuclear waste to be resolved".¹² Blair had previously said that new reactors could not go ahead until there is a plan for the waste. "Some advocates of nuclear power will doubtless argue that CoRWM has now provided that plan", said an editorial in *New Scientist* magazine. "This is optimism gone mad. Deciding to put waste down a hole, with no idea what form the repository should take or where it should be, is no more of a plan than has existed for the past 30 years".¹³

Another misjudgement

Another misjudgement by the Government does not bode well for the future either. In the Government's response¹⁴ to CoRWM, Nirex, was killed off without any consultation, running counter to the ethos of openness and transparency. It was incorporated into the Nuclear Decommissioning Authority (NDA) in what *Nuclear Engineering International* magazine called a rather "ham-fisted" and secretive way, leaving the process open to legal challenges, with a real danger we will see a "re-run of the last repository failure".¹⁵ There was no consultation about whether the NDA was the most appropriate body to take forward long-term policy implementation. In fact, as Nirex itself highlighted, there is a potential conflict of interest because the NDA is a waste producer.¹⁶

The appointment of the NDA was regarded as "problematic" by some CoRWM members because of its agenda to promote short-term efficiency. There were "potential conflicts and loss of public confidence" caused by its dual role as waste creator and waste disposer. CoRWM also made recommendations about the need for independent oversight of the policy implementation process, but these were diluted by the Government. Rather than an oversight body, the Government only committed to a reconstituted committee as an advisory

¹⁰ Judicial Review of the Consultation on the Energy Review, CoRWM, March 2007
<http://www.corwm.org.uk/Pages/Plenary%20Meetings%20Past/Pre%20November%202007/2007/27%20April%202007/2162%20-%20Judicial%20Review%20on%20Energy%20Review.doc>

¹¹ Guardian 16th Jan 2008 <http://www.guardian.co.uk/environment/2008/jan/16/nuclearpower.energy>

¹² Energy White Paper: Our Energy Future – creating a low carbon economy, DTI, February 2003.
<http://www.berr.gov.uk/files/file10719.pdf>

¹³ Optimism gone mad on nuclear waste, Rob Edwards, 9th May 2006
http://www.robedwards.info/2006/05/optimism_gone_m.html

¹⁴ Response to the report and recommendations from the Committee on Radioactive Waste Management, DEFRA et al, October 2006
<http://www.defra.gov.uk/environment/radioactivity/waste/pdf/corwm-govresponse.pdf>

¹⁵ Corrina Thomson, Who shot the sheriff? Nuclear Engineering International, July 2007.

¹⁶ Nirex legal advice, which advises against the merger is available at:
http://www.no2nuclearpower.org.uk/reports/nirex_legal_opinion.pdf

body. Members of CoRWM had "*substantial misgivings*" about these plans, which they feared could undermine public trust.¹⁷

Yucca Mountain

The Government's response also created the misleading impression that other countries had successfully built a repository for high-level waste.

As part of its campaign to build new nuclear stations around the globe, the nuclear industry often claims that any problems associated with burying nuclear waste in a deep underground repository are to do with public acceptability rather than being technical in nature. The industry often points to nuclear dumping proposals in Finland, Sweden or the United States to underline its point. But the absence of an operating nuclear waste dump for High Level Waste and spent nuclear fuel acts as a barrier to the construction of new nuclear reactors.

The proposed US nuclear waste dump at Yucca Mountain in Nevada, for instance, was originally supposed to open in 1998, but has been beset by lawsuits and political and scientific controversies. The best-possible opening date is now 2020. The projected cost to build the repository and transport all the spent radioactive fuel to Nevada from around the US and operate the site for 100 years has now grown to more than \$90 billion.¹⁸

The Bush administration had originally planned to submit its license application for the waste dump to the Nuclear Regulatory Commission (NRC) by the end of 2004, and to start burying waste in 2010. But after a string of problems, including a federal court ruling in 2004 that invalidated a repository safety standard, and an investigation into e-mails which discussed falsifying quality assurance documents,¹⁹ the 2010 date had to be abandoned. The license application was eventually submitted in June 2008.²⁰

The project still faces at least four years of NRC technical reviews, continued fights for funding and anticipated legal and political challenges from Nevada officials and other critics who say the project is flawed and unsafe and will never be built. Nevada's Nuclear Projects Agency says the license application is so "*grossly deficient that a fair and unbiased NRC would reject it.*"

A 2006 book on Yucca Mountain entitled 'Uncertainty Underground', says despite a large knowledge base, substantial funding of over \$7bn so far, and a large number of talented scientists engaged on every aspect of the problem, there continue to be delays. One important reason, say the authors, is that the scientific and engineering communities have underestimated the effort required to characterize the site and model the behaviour of the rocks and the waste over long periods of time, and the large uncertainties inherent in such analyses.²¹

Bribing a community?

In April 2007 CoRWM submitted a report on how to go about seeking volunteer communities for a deep geological repository – Implementing a Partnership Approach to Radioactive

¹⁷ Sunday Herald 10th December 2006. http://www.robedwards.com/2006/12/conflict_of_int.html

¹⁸ Las Vegas Review Journal 16th July 2008. <http://www.lvrj.com/news/25498919.html>

¹⁹ No Criminal Charges in Yucca Mountain Email Science Scandal, Environment News Service 29th April 2006 <http://www.ens-newswire.com/ens/apr2006/2006-04-28-03.asp>

²⁰ Las Vegas Review Journal 4th June 2008. <http://www.lvrj.com/news/19521549.html>

²¹ Uncertainty Underground, Allison Macfarlane and Rodney Ewing (Eds), MIT 2006. <http://www.no2nuclearpower.org.uk/reviews/index.php>

Waste Management.²² The advice was intended to assist the Government in drafting another consultation on how to implement the Committee's July 2006 recommendations, and in particular how to identify a suitable site for managing wastes.

The most important single message from CoRWM was that it is critical to take enough time to get the very earliest stages of the implementation process right. Failure to conduct these effectively and transparently could set the process back substantially. Rushing ahead with a few nuclear communities would revive recollections of past processes which failed. CoRWM said the consultation should be at least double the length of conventional three-month consultations, and engage with a wider range of participants, including members of the (non-aligned) public, (through Citizens' Panels for example) in order for the results to carry the legitimacy needed. Regrettably the Government ignored this advice, and ran its consultation for four months over the summer of 2007.²³ The House of Lords complained the Government was moving ahead not with the "steady and measured" progress required, but after "years of procrastination" we now have "unseemly haste". This is not the way to inspire public confidence.²⁴

Crucially, CoRWM also said, whilst the consultation will obviously focus mainly on the siting of a deep repository, it also needs to ensure that "*the whole package of CoRWM recommendations is also canvassed properly*", especially consideration of "*the need for and implications of robust storage (especially the extent to which willingness to participate should apply to storage facilities) and the nature of the necessary R&D to reduce uncertainties of all kinds*".

Volunteerism

UK Environment Minister Ian Pearson launched the Government's consultation on implementing geological disposal in June 2007. He said the Government needed to decide how a nuclear waste dump site would be chosen and was proposing an entirely new approach based on the concept of voluntarism - that is, communities expressing an interest in taking part in the process.²⁵ The consultation stopped short of asking communities to express an interest immediately. Rather it was about how to go about calling for expressions of interest from communities, and how a geological disposal facility should be developed.²⁶

A nuclear dump site is expected to take up to five years to identify, with 15-20 years before any construction work starts and possibly 30 years before the first waste is transported there. Communities on any shortlist of sites can expect generous 'community benefit packages', described by opponents of nuclear dumping as 'bribes'.

²² Implementing a Partnership Approach to Radioactive Waste Management – Report to Government, CoRWM, April 2007

[http://www.corwm.org.uk/Pages/Archived%20Publications/Tier%202%20\(7\)%20-%20Implementation/Tier%203%20-%20Implementation%20advice/2146%20-%20Implementing%20a%20partnership%20approach%20to%20radioactive%20waste%20management.doc](http://www.corwm.org.uk/Pages/Archived%20Publications/Tier%202%20(7)%20-%20Implementation/Tier%203%20-%20Implementation%20advice/2146%20-%20Implementing%20a%20partnership%20approach%20to%20radioactive%20waste%20management.doc)

²³ DEFRA Press Release 25th June 2007

<http://www.gnn.gov.uk/Content/Detail.asp?ReleaseID=294304&NewsAreaID=2>

²⁴ BBC 2nd June 2007 http://news.bbc.co.uk/1/hi/uk_politics/6715137.stm

²⁵ DEFRA Press Release 25th June 2007

<http://www.gnn.gov.uk/Content/Detail.asp?ReleaseID=294304&NewsAreaID=2>

²⁶ Managing Radioactive Waste Safely: A Framework for Implementing Geological Disposal, DEFRA, 25th June 2007. <http://www.defra.gov.uk/corporate/consult/radwaste-framework/consultation.pdf>

In an unprecedented move, the Scottish Government refused to endorse the June 2007 consultation. Instead it ruled out allowing deep disposal in Scotland.²⁷ The Scottish Cabinet Secretary for Rural Affairs and the Environment, Richard Lochhead, recognised that dealing with legacy waste is a significant challenge but said the Scottish Government does not accept it is right to seek to bury nuclear waste, which will remain active for thousands of years, in a deep geological facility or to expect any community to host such a facility.²⁸ However, the new Scottish Government remains fully committed to working closely with the UK Government in important aspects of radioactive waste policy and to supporting CoRWM's recommendations on interim storage and further joint research on other management options.²⁹

Writing in *The Scotsman*, Gordon Mackerron, outgoing CoRWM chair, accused Scottish Ministers of putting at risk CoRWM's whole package of recommendations. He warned against cherry picking from CoRWM's "*interdependent and inseparable package of measures*" lest the whole ball of string unravels, setting us back to where we were before CoRWM was formed.³⁰ However, not all of the Committee agreed. Pete Wilkinson backed the Scottish Executive's decision and accused the Westminster Government of putting at risk CoRWM's integrated package of recommendations by concentrating on disposal and the search for a repository site to the exclusion of other recommendations.³¹

Copeland expected to volunteer

The Guardian's description of West Cumbria as the favourite site³² upset Chris McDonald, the lead inspector of the 1995-96 Nirex public inquiry who said that the safety case for a dump near Sellafield showed the site is not suitable and investigations should be moved elsewhere.³³ David Smythe³⁴, professor of geophysics at Glasgow University warned the Government it would be "wrong" and possibly illegal in international law to use Sellafield in West Cumbria for nuclear waste disposal. He said ministers should have ruled out Sellafield after previous research proved the area was unsuitable because of its rock formations. There is clear evidence that West Cumbria possesses no suitable rocks. Smythe is convinced ministers are moving towards choosing a site on the basis of popular consent rather than scientific evidence.³⁵

NDA officials say there is no reason why West Cumbria should not be a frontrunner in the search for a disposal site, despite the fact that previous research proved the area was geologically unsuitable.³⁶ The British Geological Survey, which will assess all suggested

²⁷ Nuclear Engineering International 25th June 2007

<http://www.neimagazine.com/story.asp?sectioncode=132&storyCode=2045263>

²⁸ Scotsman 26th June 2007 <http://thescotsmanscotsmans.com/politics.cfm?id=994422007>

²⁹ Scottish Executive Press Release 25th June 2007

<http://www.scotland.gov.uk/News/Releases/2007/06/25101822>

³⁰ Scotsman 30th June 2007 <http://thescotsmanscotsmans.com/opinion.cfm?id=1021622007>

³¹ Sunday Herald, 19th Aug 2007

<http://www.sundayherald.com/news/heraldnews/display.var.1628125.0.0.php>

³² Guardian 25th June 2007 http://www.guardian.co.uk/uk_news/story/0,,2111332,00.html

³³ Guardian letters 28th June 2007 <http://www.guardian.co.uk/letters/story/0,,2113027,00.html>

³⁴ Prof David Smythe was one of the scientist who gave evidence on behalf of Friends of the Earth at the Nirex Inquiry. His evidence, and that of other FoE witnesses can be found at:

<http://www.foe.co.uk/archive/nirex/>

³⁵ Guardian 2nd Nov 2007

<http://www.guardian.co.uk/business/2007/nov/02/nuclearindustry.greenpolitics>

³⁶ Carlisle News and Star 11th Jan 2008

<http://www.newsandstar.co.uk/news/viewarticle.aspx?id=585765>

sites, said that latest research suggested that 40 to 60 per cent of Britain was suitable to store reactor waste, including much of the area around Sellafield.^{37 38}

The Lake District National Park Authority says it will “work with partners” on any proposed underground nuclear waste repository. The national park’s new Mineral and Waste core strategy states that “the likelihood of West Cumbria being put forward as a potential volunteer community is very high.”³⁹ Martin Forwood of Cumbrians Opposed to a Radioactive Environment (CORE) called this a major u-turn by the Authority.

CoRWM II

In October 2007, the Government set-up a new 'reconstituted' Committee on Radioactive Waste Management to scrutinise the NDA’s work on the management of radioactive wastes and provide independent advice.⁴⁰ Interestingly, the DEFRA press release announcing the new committee highlighted CoRWM’s role in implementation of geological disposal, whereas the Scottish Government’s release highlighted its role in scrutinising robust interim storage.⁴¹

The chair of the re-vamped committee, Professor Robert Pickard, said the Government must look again at waste from new reactors. It must commission a new study to find storage solutions for waste from new nuclear build. He re-iterated that the first CoRWM committee’s report made recommendations about deep geological disposal, but this applies to legacy waste only. According to Professor Pickard, building an effective geological storage site could take up to 120 years, with 10 years to find a suitable site. Pickard believes that communities who may volunteer their area for the storage of existing waste may not be so keen on future waste.⁴²

More recently members of CoRWM have expressed concern that their advice is being ignored in the pressure to develop plans for a deep underground waste repository, and one working group has been highly critical of the NDA's draft research and development strategy for developing a repository. It said the draft "didn't have much strategy, it was more of a snapshot".⁴³

White paper

Finally, in June 2008, more than a decade after the Nirex RCF had been refused planning permission, the Government published its White Paper: Managing Radioactive Waste Safely: A Framework for Implementing Geological Disposal.⁴⁴ As widely predicted Councils in England and Wales were asked to consider hosting a nuclear waste dump in deep underground vaults in return for government investment in jobs, road improvements and health screening - widely reported as ‘bribes’. Hilary Benn, the Environment Secretary, urged

³⁷ Observer 8th June 2008. <http://www.guardian.co.uk/environment/2008/jun/08/nuclearpower.waste>

³⁸ UK Long-term Nuclear Waste Management: Next Steps, Workshop Loughborough University, November 2006

<http://www.lboro.ac.uk/departments/cm/research/LTNWM/UK%20Long%20Term%20Nuclear%20Waste%20Management%20Report.pdf>

³⁹ Whitehaven News 23rd April 2008 <http://www.whitehaven-news.co.uk/news/business/1.92841>

⁴⁰ DEFRA Press Release 25th Oct 2007 <http://www.defra.gov.uk/news/2007/071025c.htm>

⁴¹ Scottish Government Press Release 25th Oct 2007

<http://www.scotland.gov.uk/News/Releases/2007/10/25110737>

⁴² New Civil Engineer 15th Jan 2008

http://www.nce.co.uk/news/2008/01/government_must_move_on_geological_nuclear_storage_says_co_rwm_chair.html

⁴³ N-base briefing for Shetland Islands Council, No.585, 24th September 2008.

⁴⁴ Managing Radioactive Waste Safely: A Framework for Implementing Geological Disposal, DEFRA, BERR, Devolved Administrations for Wales and Northern Ireland, June 2008
<http://www.defra.gov.uk/environment/radioactivity/mrws/pdf/white-paper-final.pdf>

councils and other groups to provide an “*essential service to the nation*” by offering sites to bury a share of Britain’s stockpile of radioactive material.⁴⁵

Copeland council in Cumbria confirmed it was planning to put its name forward. Cumbria also took the first steps towards volunteering when it decided to start talks about the implications of the deal with Copeland, and Allerdale.⁴⁶

Deep geological disposal

A briefing for the Nuclear Free Local Authorities called ‘Deep Geological Disposal: known unknowns’, by Dr Rachel Western, argues that CoRWM’s emphasis on research to “*reduce uncertainty*” was wrong. A genuine scientific programme would be concerned with evaluating whether a disposal programme can be implemented safely, not ‘reducing uncertainties’ which sounds very much like the outcome of the research is being prejudged.⁴⁷

The concept of deep geological disposal of nuclear waste is not proven for the many thousands of years that containment and isolation of the waste would be required. The Environment Agency in its November 2005 review of Nirex's phased geological disposal concept, lists 10 'key technical challenges' "...*where further work is needed before an acceptable repository safety case could be generated.*"⁴⁸

Any hope of convincing a community to volunteer to host a repository depends on the level of confidence it can generate in the long-term safety of the repository. While it is accepted that radioactivity will escape from the repository, the rate at which it does so, over what period and with what radiological impact on people and the environment remains contentious. Scientific, technical and ethical opinions on many of these issues are polarised and are likely to remain so. Issues include gas build-up, microbiological activity, the impact of water ingress and egress, low-level radiation, backfill effectiveness and longevity.

The Environment Agency’s Draft Guidance on the requirements for authorisation of a deep geological facility suggests the risk to members of the public once the repository is closed must not exceed 1 in a million per year. If this risk is converted to a dose it would be equivalent to a dose of around 20 microsieverts per year – but could be much larger in some situations if the probability of such a dose occurring was low enough.⁴⁹ This compares with a dose of 300 microsieverts per year which should not be exceeded while the facility is in operation – but developers are warned that the Government aims to reduce doses to 20 microsieverts after 2020.

In 2005 the U.S. Environmental Protection Agency's (EPA) proposed a draft new rule for radiation doses to future generations in response to a 2004 federal court ruling. The proposed

⁴⁵ Telegraph 12th June 2008

<http://www.telegraph.co.uk/earth/main.jhtml?xml=/earth/2008/06/12/eanuclear212.xml>

⁴⁶ Independent on Sunday 29th June 2008

<http://www.independent.co.uk/environment/green-living/what-happened-next-to-cumbrias-nuclear-dump-bribe-856581.html>

⁴⁷ Radioactive Waste Policy Briefing No.15, Nuclear Free Local Authorities.

<http://www.nuclearpolicy.info/docs/radwaste/RWB15.pdf>

⁴⁸ Review of Nirex Report “The Viability of a Phased Geological Repository Concept for the long-term management of the UK’s radioactive waste.” Environment Agency, November 2005.

[http://www.corwm.org.uk/Pages/Plenary%20Meetings%20Past/Pre%20November%202007/2006/25-26%20January%202006/1529%20-%20Discussion%20Panel%20Pack%201/NWAT%20\(EA\)%20review%20of%20Nirex%20Viability%20Report%20\(1\).pdf](http://www.corwm.org.uk/Pages/Plenary%20Meetings%20Past/Pre%20November%202007/2006/25-26%20January%202006/1529%20-%20Discussion%20Panel%20Pack%201/NWAT%20(EA)%20review%20of%20Nirex%20Viability%20Report%20(1).pdf)

⁴⁹ Deep Geological Disposal Facilities on Land for Solid Radioactive Wastes: Guidance on Requirements for Authorisation. Draft for Public Consultation.

http://www.environment-agency.gov.uk/commondata/acrobat/gd_consultation_2052368.pdf

standard would allow a dose limit of 3,500 microsieverts per year beyond 10,000 years - three-and-a-half times the maximum limit allowed to the public from any human activity (other than medical radiation) according to current limits established in the United States and all western countries. It would be the lowest standard in the Western world, by far. The proposal seems tailored to fit Yucca Mountain so that it can be licensed.⁵⁰ It will be interesting to see whether the NDA will be able to show that its proposals can meet a standard some 175 times lower.

Nirex suggested a worst case scenario in which the maximum dose would be 10mSv/yr (millisieverts per year = 10,000 microsieverts per year). This is ten times the legally enforceable dose limit of 1mSv/yr and 500 times higher than the target dose. CoRWM's paper on the uncertainties in radiological impact on human health, points out that, should alternative dose/risk parameters of some critics prove to be correct the worst case scenario dose could be as high as 200mSv/yr. CoRWM also noted the recent report by the Government's Committee Examining Radiation Risks of Internal Emitters (CERRIE)⁵¹ which highlighted the uncertainties in estimating dose. Clearly standards of protection deemed to be acceptable today may not be acceptable to future generations.⁵²

Waste quantities

The Government says it anticipates that in the event there were new reactors, waste and spent fuel from those stations could be accommodated in the same geological disposal facility – even though this might increase the total radioactivity by a factor of nearly three.

The nuclear industry claims a new generation of reactors will add only 10% to the volume of radioactive waste. But this is misleading because the majority of existing waste is made up of bulky, lower-level waste. The volume is not the whole story – we also need to know the type of waste.⁵³ CoRWM's Radioactive Waste Inventory estimates existing reactors will produce three times the amount of high-level waste and spent fuel created by the past 60 years of nuclear power.⁵⁴ It will increase the amount of radioactivity held in all nuclear wastes by an additional 265%.

New high-efficiency nuclear fuel used in new reactors may be harder to dispose of than waste from existing reactors. By further enriching the uranium used to power nuclear reactors, operators can extract more electricity from a given amount of fuel. However, this type of spent fuel will be far more radioactive than existing waste and may even require a second repository.⁵⁵

⁵⁰ Institute for Energy and Environmental Research (IEER) Press Release, 9th August 2005.

<http://www.ieer.org/latest/yuccaepapr0805.html>

IEER submission to EPA 21st November 2005, <http://www.ieer.org/comments/waste/yuccaepa.html>

⁵¹ See <http://www.cerrie.org/>

⁵² Future R&D Needs, by Gordon MacKerron, CoRWM, June 2007.

[http://www.corwm.org.uk/Pages/Archived%20Publications/Tier%20\(4\)%20-%20Making%20decisions/Tier%20\(3\)%20-%20Scoring%20and%20sensitivity%20testing/2209%20-%20Future%20RandD%20needs.doc](http://www.corwm.org.uk/Pages/Archived%20Publications/Tier%20(4)%20-%20Making%20decisions/Tier%20(3)%20-%20Scoring%20and%20sensitivity%20testing/2209%20-%20Future%20RandD%20needs.doc)

⁵³ Guardian, 9th January 2006 <http://www.guardian.co.uk/frontpage/story/0,16518,1682244,00.html>

⁵⁴ Inventory Summary Information, CoRWM, January 2006.

[http://www.corwm.org.uk/Pages/Archived%20Publications/Tier%20\(6\)%20-%20Reporting/Tier%20\(3\)%20-%20CoRWM%20inventory/1531%20-%20Inventory%20summary%20information,%20including%20new%20build%20\(the%20One%20Page\).doc](http://www.corwm.org.uk/Pages/Archived%20Publications/Tier%20(6)%20-%20Reporting/Tier%20(3)%20-%20CoRWM%20inventory/1531%20-%20Inventory%20summary%20information,%20including%20new%20build%20(the%20One%20Page).doc)

⁵⁵ Too Hot to Handle, by Hugh Richards, April 2008

<http://www.no2nuclearpower.org.uk/reports/TooHottoHandle.pdf>

New Scientist 9th April 2008 <http://www.robedwards.com/2008/04/nuclear-super-f.html>

Contractors

Bechtel, which has built the nuclear waste dump at Yucca Mountain, is one of three American engineering firms which have been approached by the Government over the construction of a British dump. Bechtel, Washington Group and Jacobs Group have already given informal advice on how to proceed. The NDA hopes to have a contractor for the design, construction and operation of the repository in place soon.⁵⁶

Conclusion

In a speech to the Unite trade union, Business Secretary John Hutton claimed the nuclear waste problem was solved. "In terms of waste disposal, I don't think there is an argument about how it should be done," he said. "There is an argument about where it should be done".⁵⁷ The Government is trying to create the impression it has a solution to the nuclear waste problem to further its aim of building a new generation of reactors. Its argument that nuclear power is the "silver bullet" to tackle climate change, as SNP Energy Spokesperson Mike Weir puts it, means it is pushing ahead with waste proposals with "unseemly haste". This has almost certainly already undermined almost a decade of hard work dedicated to solving this intractable problem. For a brief period it looked as though the Government might develop a new, more democratic model for making hard decisions, but now it looks as though it will revert to the heavy handed tactics of the 1970s and 80s.

Pete Roche

⁵⁶ Independent on Sunday 17th Dec 2006

<http://news.independent.co.uk/business/news/article2081538.ece>

⁵⁷ BBC 26th March 2008, http://news.bbc.co.uk/1/hi/uk_politics/7313986.stm