HOUSE OF LORDS

Science and Technology Committee

5th Report of Session 2003-04

Radioactive Waste Management

Report with Evidence

Ordered to be printed 9 November and published 10 December 2004

Published by the Authority of the House of Lords

London : The Stationery Office Limited

£11.00

HL Paper 200

Science and Technology Committee

The Science and Technology Committee is appointed by the House of Lords in each session "to consider science and technology".

Current Membership

The Members of the Science and Technology Committee in the 2003-04 session are:

Lord Broers (co-opted)
Baroness Finlay of Llandaff
Lord Lewis of Newnham
Lord Mitchell
Lord Oxburgh (Chairman)
Lord Paul
Baroness Perry of Southwark
Baroness Platt of Writtle
Baroness Sharp of Guildford
Lord Soulsby of Swaffham Prior
Lord Sutherland of Houndwood
Lord Turnberg
Baroness Walmsley
Lord Winston
Lord Young of Graffham

In addition, Lord Flowers, Lord Jenkin of Roding and Lord Tombs were co-opted specifically for this inquiry. For the declared interests of Members of the Committee with regard to this inquiry, see Appendix 1.

Information about the Committee and Publications

Information about the Science and Technology Committee, including details of current inquiries, can be found on the internet at http://www.parliament.uk/hlscience/. Committee publications, including reports, press notices, transcripts of evidence and government responses to reports, can be found at the same address.

Committee reports are published by The Stationery Office by Order of the House.

General Information

General information about the House of Lords and its Committees, including guidance to witnesses, details of current inquiries and forthcoming meetings is on the internet at: http://www.parliament.uk/about_lords/about_lords.cfm.

Contacts for the Science and Technology Committee

All correspondence should be addressed to:
The Clerk of the Science and Technology Committee
Committee Office
House of Lords
London
SW1A 0PW

The telephone number for general enquiries is 020 7219 5750.
The Committee's email address is hlscience@parliament.uk.

CONTENTS

Oral Evidence

ABSTRACT

Almost 30 years after the Royal Commission on Environmental Pollution first drew attention to the urgent need to find a long-term solution to the problem of storing radioactive waste, there is still no strategy for dealing with the United Kingdom's high and intermediate level radioactive waste. Surface stores of such waste are already considerable, and continue to increase in volume. In the current climate of uncertainty over global security, there are now serious concerns over their vulnerability to terrorist attack.

In 1997 planning permission for an underground test laboratory near Sellafield was refused. This was regarded as an essential first step before the building of an underground repository for radioactive materials. Since 1997 the Government have procrastinated until earlier this year when the Committee on Radioactive Waste Management (CoRWM) was established.

CoRWM is charged both with finding the best technical solution to the problems of radioactive waste management and with inspiring public confidence in it.

In the light of the numerous authoritative and exhaustive reports that have been published in the United Kingdom and abroad, of current international agreements, and of European Union guidance, we are astonished that the Committee should have been told to set about this task "with a blank sheet of paper". CoRWM could more fruitfully have been instructed to concentrate on the various alternatives for underground repositories that United Kingdom and international opinion have identified as the best options.

We regard it as most unlikely that meaningful public acceptance can be secured for any particular method of managing nuclear waste in the abstract. As the Department's own survey shows the wider public becomes exercised with this topic only when particular sites are up for discussion.

We commend CoRWM for its objectives of openness, transparency and inclusivity. We are, however, concerned at the actual opacity of its open meetings, and the undue emphasis given to investigating methodologies of decision-making and public and stakeholder engagement at the expense of identifying the right scientific and technical solution.

Overall, we find that CoRWM's terms of reference are dauntingly broad and in some respects astonishingly vague. We judge the composition of CoRWM to be inappropriate for offering advice to the Government on the technical aspects of their remit. We were unconvinced by CoRWM's response that they could rely on the peer-reviewed advice of consultants to arrive at the appropriate technical solution. We therefore regard it as essential that CoRWM should have more internal technical expertise and we make suggestions as to how this might be done.

We note that the delay in developing a strategy for handling nuclear waste is seen by the Government as an impediment to considering the role of nuclear power in meeting its objectives of planned reductions in carbon emissions and a secure energy supply. We deplore this and urge the Government to reconsider.

Radioactive Waste Management

CHAPTER 1: INTRODUCTION

1.1. This Report examines recent developments in the United Kingdom Government's radioactive waste management policy. It follows up two earlier Reports by the Committee, on *Management of Nuclear Waste* and on *Managing Radioactive Waste: the Government's consultation*.[1] On this occasion we have focused on the role of the Committee on Radioactive Waste Management (CoRWM), which was appointed by the Government in November 2003.[2] CoRWM has been asked "to oversee a review of options for managing solid radioactive waste in the United Kingdom and to recommend to Ministers the option, or combination of options, that can provide a long-term solution, providing protection for people and the environment."[3]

1.2. On 17 September 2004 the Select Committee attended the second day of CoRWM's open meeting in Ipswich. Following the meeting, Mr Gordon MacKerron, Chairman of CoRWM, gave the Select Committee a brief presentation on the work of CoRWM, and answered questions. A note of this meeting is at Appendix 3. On 18 October the Select Committee took formal evidence from Mr MacKerron, along with two colleagues, and separately heard from the Minister of State for the Environment, Mr Elliot Morley MP. The transcripts of these meetings are reprinted in this volume.

1.3. The body of this report examines the process by which CoRWM was established and the manner in which it is operating, before putting these matters in the context of wider radioactive waste policy.

Summary of conclusions

1.4. The Select Committee remains deeply concerned at the slow progress towards developing policy in this area. From the evidence we have heard in the course of this short inquiry, and drawing on our previous work, we have reached the following conclusions:

Timing

1. Since 1997 progress towards finding a long-term solution to the problem of radioactive waste management has been bedevilled by delay. Both Mr MacKerron (Q 3) and Mr Morley (Q 36) assured us that CoRWM will be able to deliver its recommendation to Ministers by July 2006. This timetable must not be allowed to slip, nor must CoRWM's report be followed by further procrastination. (Paragraph 3.4)

---

1 *Management of Nuclear Waste*, 3rd Report, Session 1998-99 (HL Paper 41); and *Managing Radioactive Waste: the Government's consultation*, 1st Report, Session 2001-02 (HL Paper 36).

2 *New team appointed to find long term solution for UK nuclear waste*, Defra news release 479/03, 17 November 2003.

3 CoRWM terms of reference paragraph 1; full terms of reference available from http://www.corwm.org.uk/content-1.

A "blank sheet of paper"

2. We are astonished that CoRWM was asked to start from a "blank sheet of paper" when several of the options being considered had already in effect been ruled out by the Government and numerous authoritative bodies. CoRWM must waste no more time considering infeasible strategies. (Paragraph 3.15)

Scientific expertise and commissioning scientific work

3. We cannot understand why Defra's Chief Scientific Advisor was not directly involved in the formation of a committee that will be providing advice to Ministers on crucial scientific and technical matters. The inadequacies in CoRWM that we have found might well have been recognised at an early stage in its conception if Ministers had involved the Chief Scientific Advisor from the outset. (Paragraph 3.11)

4. There is a danger that, without technical expertise relating to waste management options, CoRWM will be unable to evaluate evidence critically. Total reliance on contractors is unwise. (Paragraph 4.9)

5. We welcome the involvement of the learned societies, including the Royal Society and the Royal Academy of Engineering, in the technical assessment of CoRWM's work, and in identifying data gaps. (Paragraph 4.4)

6. We urge the Government to consider, without delay, either the appointment of additional members to CoRWM with expertise in earth science, materials or civil engineering, or the establishment of a technical sub-committee to CoRWM comprising several members of the main committee along with a number of experts with experience of relevant technologies. It is not too late for such experts to play an important role in the decision-making process. (Paragraph 4.8)

Public and stakeholder engagement

7. The amount of time and money CoRWM gives to discussing its methodology of engagement and ways of working is disproportionate to the public engagement that is likely to be generated by its work. (Paragraph 4.14)

Meetings of CoRWM

8. Documents submitted to CoRWM should be made available to the public, well in advance of meetings. At the meeting itself, some indexing of papers is essential to enable the public to follow proceedings. The meeting, its room and proceedings, should be accessible to all members of the public as far as is practicable. (Paragraph 4.17)

After CoRWM reports

9. The Government must be clear as to what they expect from CoRWM so that the next stage can follow on promptly. Planning and preparation by Government will be needed regardless of CoRWM's recommendation. They must not wait until 2006. (Paragraph 5.2)

The future of nuclear power

10. The Government must no longer allow delays in developing a long-term radioactive waste management strategy to be used as a pretext for deferring decisions on the future of nuclear power. To do so would seriously narrow the range of options open to the Government in meeting their longer term energy and environmental goals. The small uncertainties associated with radioactive waste disposal that still exist must be balanced against the spectre of global warming: the consequences of not doing enough to limit greenhouse gas emissions may be catastrophic. (Paragraph 5.10)

CHAPTER 2: BACKGROUND

2.1. The scale of the problem may be quantified by reference to CoRWM's own preliminary inventory of the United Kingdom's radioactive waste materials: there are currently 764 m^3 of "high level" waste (see Box 1), with a similar amount expected to arise in the future from the current nuclear programme. This waste is stored above ground, mostly at Sellafield. The total amount of current "intermediate level" waste is 74,500 m^3, with 162,700 m^3 unavoidably arising in the future from the current nuclear programme. This is also held in surface stores, at various nuclear sites around the United Kingdom. All this waste poses a potential health risk and will continue to do so for many thousands of years. The volume of "low level" waste is much higher, but this is mostly disposed of at a dedicated site at Drigg in Cumbria, and therefore falls outside the remit of CoRWM and this inquiry.

BOX 1

Classification of radioactive waste[4]

For the purposes of the inventory, and for general description, wastes are divided into three categories according to the concentrations of radioactive materials in them and the way they arise: high level, intermediate level and low level.

High Level Waste (HLW), also known as heat-generating waste, consists mainly of concentrated liquid nitric acid product from the reprocessing of spent nuclear fuel. HLW is concentrated by evaporation and stored in double-walled stainless steel tanks encased in thick concrete walls. In addition a small quantity of liquid HLW has been immobilised in glass (vitrified), and by 2015 most of it will be in this form.

Intermediate Level Waste (ILW) consists mainly of metals, with smaller quantities of organic materials, inorganic sludges, cement, graphite, glass and ceramics. ILW mainly arises from the dismantling and reprocessing of spent fuel and from the general operation of nuclear plants. ILW is contained in cement and put inside steel drums, which are then placed in an above-ground concrete store.

Low Level Waste (LLW) includes metals (redundant equipment) and organic materials (laboratory equipment, clothing and paper towels). The organic materials mainly come from hospitals and research establishments. LLW is safely disposed of in containers inside a concrete vault at Drigg, near Sellafield.

2.2. The waste is a legacy of decades of military and civil nuclear programmes. The need to develop a policy on long-term storage or disposal of such waste was identified as long ago as 1976 when the Royal Commission on Environmental Pollution published its seminal report.[5] However, the defining moment of recent years came in 1997 when the outgoing Government decided to accept the recommendation of the planning inspector and to uphold Cumbria County Council's refusal to grant Nirex planning

---

4 Source: Defra Radioactive Waste Management web pages: http://www.defra.gov.uk/environment/radioactivity/waste/index.htm.

5 *Nuclear Power and the Environment,* Royal Commission on Environmental Pollution Sixth Report (1976).

permission for a Rock Characterisation Facility at Sellafield.[6] This decision effectively "stopped dead in its tracks the search for a long-term disposal route for intermediate level radioactive waste".[7] In 1999, in the wake of this debacle, this Select Committee published a comprehensive report, *Management of Nuclear Waste*, which analysed the disposal and storage options for radioactive waste, and discussed ways to ensure that any solution was publicly acceptable.

2.3. The Government accepted two principal recommendations of the report: first, that there was an urgent need to develop a policy for the permanent storage of the growing amounts of radioactive waste, and second, given public interests and concerns, that the policy should be developed with wide consultation. The report also recommended disposal of radioactive waste in an underground repository as the best long-term solution.

2.4. Since 1997, various authoritative reports have been published on this subject, including the report of the Consensus Conference on radioactive waste management in 1999;[8] the report of the House of Commons Environment, Food and Rural Affairs Committee in February 2002;[9] and the report of the Royal Society in May 2002.[10] They broadly support this Committee's conclusion that underground storage or disposal represents the best long-term solution.

2.5. We also commend a recent interdisciplinary study from the Massachusetts Institute of Technology (MIT), *The Future of Nuclear Power*, published in July 2003, which contains a chapter and appendix on radioactive waste management.[11] It points out "that there is today a high level of confidence within the scientific and technical community that the geologic repository approach is capable of safely isolating the waste from the biosphere for as long as it poses significant risks. This view has been stated and supported in several recent national and international assessments", the references to which we take the opportunity to reproduce here.[12] This is also the view of the European Commission in its proposed Council Directive on the safe management of spent nuclear fuel and radioactive waste, which would

---

6 A "Rock Charcterisation Facility" (essentially an underground laboratory) was required to confirm that the geology of the site, which was planned to be used as an ILW repository, was suitable.

7 *Radioactive Waste—Where Next?* Parliamentary Office of Science and Technology (POST) Report 106 (1997).

8 *UK CEED Consensus Conference on Radioactive Waste*, available at http://www.ukceed.org/consensus_conference/contents.htm.

9 *Radioactive Waste: The Government's Consultation Process*, 3rd Report, Session 2001-02 (HC Paper 407).

10 *Developing UK policy for the management of radioactive waste*, The Royal Society, Policy document 12/02, April 2002.

11 *The Future of Nuclear Power, An Interdisciplinary MIT Study* (2003), ISBN 0-615-12420-8, available at http://web.mit.edu/nuclearpower/.

12 *Scientific and Technical Basis for Geological Disposal of Radioactive Wastes*, International Atomic Energy Agency Technical Report No. 413, Vienna, February 2003; *Disposition of High Level Waste and Spent Nuclear Fuel: The Continuing Societal and Technical Challenges*, National Academy of Sciences Board on Radioactive Waste Management, National Academy Press, Washington, D.C., 2001; *The Environmental and Ethical Basis of Geologic Disposal of Long-lived Radioactive Wastes: A Collective Opinion of the Radioactive Waste Management Committee of the OECD Nuclear Energy Agency*, Nuclear Energy Agency, OECD, Paris, 1995; *Geologic Disposal of Radioactive Waste: Review of Developments in the Last Decade*, Nuclear Energy Agency, OECD, Paris, 1999.

require Member States to study the possibility of giving priority to deep geological disposal for high-level and long-lived waste.[13]

2.6. In 2001 the Government launched a consultation paper, *Managing Radioactive Waste Safely*, which asked how the public could be involved in decision taking.[14] It failed to address any of the substantive issues, betraying a preoccupation with process at the expense of content. Our report on the consultation paper argued that it was flawed "by providing insufficient background to enable meaningful responses".[15] The Government's response to this consultation was to set up a new independent body, CoRWM, announced in July 2002.[16] The timetable for its programme of work should culminate in a recommendation to ministers in July 2006.

---

13 Amended proposal for a Council Directive (Euratom) on the safe management of the spent nuclear fuel and radioactive waste, COM(2004)526, 8 September 2004.

14 Published by Defra, the Scottish Executive, the National Assembly for Wales and the Northern Ireland Department of the Environment under the full title *Managing Radioactive Waste Safely: proposals for developing a policy for managing solid radioactive waste in the UK* (2001).

15 *Managing Radioactive Waste: the Government's consultation*, Paragraph 3(a).

16 *Margaret Beckett announces next steps on managing radioactive waste*, Defra news release 315/02, 29 July 2002.

CHAPTER 3: ESTABLISHMENT OF CORWM

Timing

3.1. It is clear from the reports listed above that the science and technology of radioactive waste management have changed little since 1997. The desire of the Government to embark on repeated consultation exercises looks increasingly like an attempt to put off taking a decision.

3.2. Much of the Government's *Managing Radioactive Waste Safely* "consultation on a consultation" was unnecessary. Much thought has been given to public and stakeholder engagement (PSE) on high profile technical and scientific matters (including our own *Science and Society* report in 2000).[17] Indeed, several relevant examples of such PSE already exist, including Defra's own Chemicals Stakeholder Forum, on which we comment below. We agree with the Royal Society that "the processes of public consultation are more or less well known and could be readily designed by experienced social scientists working with relevant technical and policy experts."[18]

3.3. In 1999 an independent body with strong technical expertise would have been well placed swiftly to review the management options. Government would then have been in a position to set up a body to take forward public and stakeholder engagement in the process of looking at possible sites.

3.4. **Since 1997 progress towards finding a long-term solution to the problem of radioactive waste management has been bedevilled by delay. Both Mr MacKerron (Q 3) and Mr Morley (Q 36) assured us that CoRWM will be able to deliver its recommendation to Ministers by July 2006. This timetable must not be allowed to slip, nor must CoRWM's report be followed by further procrastination.**

CoRWM's terms of reference

3.5. CoRWM's terms of reference require it to undertake two distinct but related tasks:

- to propose a technical solution;
- to inspire public confidence in that solution.

3.6. The terms of reference also require CoRWM to review the options "in an open, transparent and inclusive manner." This emphasis is welcome. However, we are sceptical that the public will in reality be interested or engaged by the current process, which will be perceived to be largely theoretical. Indeed, this is backed up by the findings of the Government's own consultation, that most people "will not be interested in the issue of radioactive waste until it affects them directly."[19]

3.7. CoRWM is required to arrive at a recommendation which can "inspire public confidence". However, public confidence will largely be won or lost

---

17 *Science and Society*, 3rd Report , Session 1999-2000 (HL Paper 38).

18 *Developing UK policy for the management of radioactive waste*, Royal Society Policy document 12/02 (2002), Paragraph 5.3.

19 *Managing Radioactive Waste Safely, Summary of Responses to the Consultation, September 2001-March 2002* (2002), Paragraph 25.

by the process of site selection which follows CoRWM's work. In the meantime, the requirement that the right scientific and technical solution is found seems to have been given a lower priority than it deserves. Future generations will not forgive a wrong choice made because it was deemed to inspire public confidence.

Scientific expertise

3.8. We note that CoRWM's terms of reference specify its composition. Paragraph five states that it will include people with a range of expertise, then lists the skills that Ministers will hope to find included. One of these is "scientific and technical issues such as earth science, materials and their properties, and civil engineering". With the greatest respect to the members of CoRWM, who possess expertise in many areas, we do not feel that these essential skills are adequately represented within CoRWM.

3.9. As a result, we have no confidence in the technical ability within CoRWM itself sufficiently to understand the science of some of the disposal options. Whilst CoRWM will receive advice from a number of sources, we do not believe it can even be considered an "intelligent customer" for technical advice without additional expertise. It appears to have been formed with a view to inspiring public confidence in a solution at the expense of finding the best solution.

3.10. We asked the Minister in writing whether Defra's Chief Scientific Advisor, or other senior scientific advisors within the Department, were involved in setting up CoRWM, deciding its composition and terms of reference; and if so, how. The Minister replied that the Defra Chief Scientific Advisor "was not directly involved in the setting up of CoRWM, although [he] has been kept informed of its establishment and development of its work."

3.11. **We cannot understand why Defra's Chief Scientific Advisor was not directly involved in the formation of a committee that will be providing advice to Ministers on crucial scientific and technical matters. The inadequacies in CoRWM that we have found may well have been recognised at an early stage in its conception if Ministers had involved the Chief Scientific Advisor from the outset.**

A "blank sheet of paper"

3.12. We are also concerned that CoRWM's terms of reference require it in effect to start from a "blank sheet of paper", as Mr MacKerron put it (Q 5).

3.13. The Government's consultation paper summarised the main options (which numbered nine) for long-term management of radioactive wastes.[20] Five of these (disposal at sea, sub-seabed disposal, outer space, subduction zones and ice sheets) were classified as "unacceptable" or having been "ruled out", and the Minister confirmed to us that "disposal at sea is clearly out" (Q 44).[21] One option, partitioning and transmutation, was described as only

---

20 Appendix 1 of *Managing Radioactive Waste Safely*.

21 Sub-seabed disposal (referring to disposal in empty offshore oil and gas fields) was ruled out in the consultation document because of the United Kingdom's obligations under the London Convention and OSPAR. However, the MIT study puts forward a variation on this method by proposing further research into disposal in deep boreholes, which may be sited on land or offshore. We believe this should be included in the consideration of any method of underground disposal.

a partial solution. The remaining three were above ground storage, which must now—given heightened security concerns—be seen as unsatisfactory, underground storage and underground disposal.

3.14. Starting from underground disposal and storage as the likeliest options, the Government should by now have begun the process of investigating possible sites which could accommodate either. This process, conducted in the open, transparent and inclusive way that CoRWM has been asked to operate, would have brought real public interest and engagement. Instead this vital next stage is being still further delayed.

3.15. **We are astonished that CoRWM was asked to start from a "blank sheet of paper" when several of the options being considered had already in effect been ruled out by the Government and numerous authoritative bodies. CoRWM must waste no more time considering infeasible strategies.**

CHAPTER 4: WORK OF CORWM

Commissioning scientific work

4.1. We are pleased to see that CoRWM is well supported by Defra, with a six-strong secretariat and external programme management (Q 3). We are concerned, though, that programme managers were not selected by Defra until over six months after CoRWM had begun work.

4.2. Mr MacKerron told us that CoRWM had requested an increase in budget from Defra to support further technical and specialist work (Q 9). He felt that the initial budget of £0.5 million was not adequate, but was optimistic that an additional £0.25 million would be forthcoming. In addition, Mr MacKerron told us that CoRWM would draw on the learned societies to review the technical work it is proposing to commission, and as part of its own technical assessment of options (QQ 9, 11).

4.3. Mr MacKerron also pointed out that it did not fall within CoRWM's had remit or scope to commission fundamental new scientific work (Q 11). Sufficient scientific understanding of physical processes already exists to allow a decision on radioactive waste management to be made in principle. However, in this context we draw attention to the MIT study *The Future of Nuclear Power*, which recommends that further research be commissioned on potential improvements or alternatives to the current mainstream mined repositories approach to geological disposal.[22]

4.4. **We welcome the involvement of the learned societies, including the Royal Society and the Royal Academy of Engineering, in the technical assessment of CoRWM's work, and in identifying data gaps.**

4.5. The complex methodology employed by CoRWM, and the lack of sufficient in-house technical expertise, has necessitated the appointment, as noted above, of an external consultant (NNC) as the programme manager. NNC describes itself on its website as the United Kingdom's "premier dedicated nuclear services company and is committed to delivering cost-effective engineering solutions and safety consultancy services throughout the life cycle of nuclear plants."[23] Amongst many other activities, NNC operates a laboratory measuring radioactivity in low-level waste on behalf of the Environment Agency.

4.6. NNC, as the programme manager, is outside the formal decision-making line of responsibility, yet as we witnessed, it is on hand at meetings to advise the Committee on technical issues (Q 13). We pressed Mr MacKerron on this matter. He assured us that his Committee would make full use of a range of consultants both to commission work and to help evaluate the results. He told us of his eagerness to ensure that technical work was commissioned from sources other than NNC. CoRWM would also use independent review by the learned societies as indicated above. But given the limited capability within the United Kingdom on these matters, we suspect that in practice NNC may be in a very strong position to bid for the work CoRWM commissions, as well as for that which will arise subsequently as a result of

22 *The Future of Nuclear Power*, pp. 86-87.

23 See http://www.nnc.co.uk/.

CoRWM's recommendations. We do not question the integrity of either CoRWM or NNC, but there is clearly the potential for a conflict of interests, and a lack of clarity in lines of responsibility.

4.7. As Mr MacKerron stated, CoRWM will take full ownership of its recommendations (Q 6), and it is therefore essential that it should possess its own technical expertise so as to be able to evaluate critically any advice received, whether from the programme manager or from other sources. Do the Government really intend to make important national decisions on a technical matter with far reaching consequences, on the advice of a committee that has such heavy dependence on commercially provided external advice?

4.8. **We urge the Government to consider, without delay, either the appointment of additional members to CoRWM with expertise in earth science, materials or civil engineering, or the establishment of a technical sub-committee to CoRWM comprising several members of the main committee along with a number of experts with experience of relevant technologies. It is not too late for such experts to play an important role in the decision-making process.**

4.9. **There is a danger that, without technical expertise relating to waste management options, CoRWM will be unable to evaluate evidence critically. Total reliance on contractors is unwise.**

Public and stakeholder engagement

4.10. When members of the Select Committee visited the second day of CoRWM's open meeting in Ipswich, we were dismayed at the length of time given over to discussion of methodology. At times it felt as though CoRWM was engaged in a philosophical exercise in theoretical decision making. In particular, much effort is being devoted to a Principles Working Group, whose aim is "to define the principles—such as transparency and fairness—to which CoRWM should work", discussing "roles, responsibilities and values in decision making." The discussion of a hypothetical situation "where a majority hold a view that a minority cannot subscribe to, and where they are also unable to agree to disagree" could be taken as a satire on bureaucratic processes in general.[24]

4.11. Whilst we recognise that thought must be given as to how CoRWM will engage with the public and take decisions, the amount of discussion given over to these issues seems disproportionate. As Mr MacKerron (Q 21) and Mr Morley (Q 60) admitted, there are similarities between what CoRWM is undertaking, and the work of others, yet, in methodology as in substance, once again CoRWM seems to be starting from a blank sheet of paper.

4.12. Defra's own Chemicals Stakeholder Forum (Box 2) and Agricultural Environment and Biotechnology Commission (Q 60) are well established models for public engagement in decision making. We can also point to the work of the Human Genetics Commission, which has in its remit to advise ministers and gain public confidence, and which has a Public Involvement Strategy.

---

[24] Paragraph 2 of CoRWM paper 578.

BOX 2

The Chemicals Stakeholder Forum[25]

The Chemicals Stakeholder Forum (CSF) advises the Government on how industry should reduce the risks from hazardous chemicals to the environment and to human health through the environment. The CSF has 19 members drawn from industry, environmental and animal protection and conservation organisations, trade unions, consumer groups and the scientific community.

The Forum has access to high quality scientific, technical, economic and other guidance. This covers a range of environmental, health and other issues which fall within the responsibility of many Government departments. One of the sources of such guidance is the Advisory Committee on Hazardous Substances (ACHS) comprising ten scientists, drawn from both private-sector industries and public-sector non-governmental organisations. The ACHS is politically independent, and provides objective, impartial advice from a purely scientific perspective. The Committee has retained its role of advising the government directly where appropriate.

4.13. We await CoRWM's plans for continued PSE with interest. As we noted in our report *Science and Society*, public dialogue techniques fall into two kinds:

- Market research exercises, designed to improve policy-makers' understanding of the attitudes and values of the public by engaging with a more or less representative sample;
- Public consultation exercises, designed to engage directly with as many as possible of the public at large.

These two possible purposes are not mutually exclusive. However, while CoRWM's objective is to engage the public as a whole, the techniques that are currently being employed appear to consist more of market research, using representative samples. There is a danger that the two kinds of dialogue are being confused.

4.14. **The amount of time and money CoRWM gives to discussing its methodology of engagement and ways of working is disproportionate to the public engagement that is likely to be generated by its work.**

Meetings of CoRWM

4.15. When members of the Select Committee attended CoRWM's meeting in Ipswich, we were also astonished at the volume of impenetrable paperwork that was on offer to members of the public. We understand that the open meetings are not part of the public or stakeholder engagement process (Q 19), but if meetings are to be open they should at least be intelligible. Furthermore, Ipswich Town Hall had no wheelchair access, and had acoustics such that even members of CoRWM found it hard to hear each other. There is no point holding a meeting in public if the public cannot hear or understand what is going on.

---

[25] Source: Defra's Chemicals web pages on the CSF (http://www.defra.gov.uk/environment/chemicals/csf) and ACHS (http://www.defra.gov.uk/environment/chemicals/achs).

4.16. In contrast the Food Standards Agency Board, which also embraces openness by meeting in public, makes all relevant papers comprehensible and available on its website well in advance.

4.17. **Documents submitted to CoRWM should be made available to the public, well in advance of meetings. At the meeting itself, some indexing of papers is essential to enable the public to follow proceedings. The meeting, its room and proceedings, should be accessible to all members of the public as far as is practicable.**

CHAPTER 5: WIDER POLICY ISSUES

After CoRWM reports

5.1. As we have noted, public interest will become much more intense when potential locations for the chosen storage or disposal method are investigated. However, CoRWM's terms of reference are somewhat vague as to its role at this critical stage: "the assessment of options will not consider potential radioactive waste sites; but it will raise siting issues … CoRWM will need to consider these issues, and *may want to make recommendations* to Ministers on them" (our emphasis). We are dismayed by this vagueness which seems a recipe for yet further delay. CoRWM must not be left to decide whether to produce a second report on implementation issues (Q 67). When asked about post-CoRWM timescales, the Minister answered simply "I think you will have to wait for the report in July 2006" (Q 66). This is unacceptable. There is no reason to wait until 2006: scenarios for post-CoRWM work and processes should be explored now and over the coming two years.

5.2. **The Government must be clear as to what they expect from CoRWM so that the next stage can follow on promptly. Planning and preparation by Government will be needed regardless of CoRWM's recommendation. They must not wait until 2006.**

5.3. Looking at the longer term, it is clear from the work done by MIT that the United Kingdom is dragging its feet compared to other countries, though we were pleased that the Minister was able to correct their report that a decision on disposal plans in the United Kingdom would be delayed until 2040 (Q 52).[26]

The future of nuclear power

5.4. In recent years, the threat of climate change has become more quantifiable. The best available scientific evidence finds that the observed global warming over the last 50 years is due to increases in greenhouse gas concentrations as a result of human activities.[27]

5.5. The Government have set a target of reducing carbon dioxide emissions in the United Kingdom by 60 per cent by 2050. The role that nuclear power can play in this respect is widely recognised, and is becoming a matter of increasingly urgent public debate. With the proportion of electricity generated by nuclear projected to drop from 24 per cent to 7 per cent over the next 15 years, the United Kingdom will become more and more reliant on imported gas, which raises serious questions regarding the security of supply.[28] As we stated in our recent report *Renewable Energy: Practicalities*, we do not believe that renewables will contribute as much as the Government expect to the United Kingdom's electricity needs.[29]

---

26 *The Future of Nuclear Power*, Table A-7.A.1.

27 *Climate Change 2001: Synthesis Report*, Intergovernmental Panel on Climate Change Third Assessment Report, Question 9.

28 *Updated UK Energy Projections*, DTI Working Paper May 2004.

29 *Renewable Energy: Practicalities*, 4th Report Session 2003-04 (HL Paper 126).

5.6. The RCEP concluded in 1976: "There should be no commitment to a large programme of nuclear fission power until it has been demonstrated beyond reasonable doubt that a method exists to ensure the safe containment of long-lived highly radioactive waste for the indefinite future."[30]

5.7. For retrievable storage we believe that this condition has now been substantially satisfied. In the decades since RCEP reported, technology has progressed and there has been much research into disposal techniques. New methods of handling high-level waste by vitrification (locking waste into a glass-like substance) have been developed, and as noted earlier, there is overwhelming scientific consensus that underground disposal is "capable of safely isolating the waste from the biosphere for as long as it poses significant risks".[31]

5.8. The lead time for constructing new nuclear power stations could be more than a decade. It is therefore alarming, particularly given the lack of urgency shown by the Government, that resolving the long-term issue of nuclear waste is still being presented, in Mr Morley's words as "a prerequisite in terms of deciding whether or not future nuclear power is viable" (Q 80). We disagree, although it is clearly desirable that there should at least be a plan for the long-term management of waste as a preliminary to new build.[32]

5.9. We neither endorse nor reject the concept of new nuclear build, but it should be recognised that modern reactors produce significantly lower waste volumes than the present generation of United Kingdom installations. A new nuclear programme would therefore add relatively low amounts of radioactive waste to that which already exists or will exist with the decommissioning of current nuclear plant. Whether or not there is a new nuclear programme, a long-term strategy for dealing with radioactive waste is essential and will have to be implemented.

5.10. **The Government must no longer allow delays in developing a long-term radioactive waste management strategy to be used as a pretext for deferring decisions on the future of nuclear power. To do so would seriously narrow the range of options open to the Government in meeting their longer term energy and environmental goals. The small uncertainties associated with radioactive waste disposal that still exist must be balanced against the spectre of global warming: the consequences of not doing enough to limit greenhouse gas emissions may be catastrophic.**

---

30 *Nuclear Power and the Environment.*

31 See the MIT study, *The Future of Nuclear Power*, p. 54.

32 *Management of Nuclear Waste*, Paragraph 2.26.

APPENDIX 1: COMMITTEE MEMBERSHIP

The members of the committee which conducted this inquiry were:

* Lord Broers
Baroness Finlay of Llandaff
† Lord Flowers
† Lord Jenkin of Roding
Lord Lewis of Newnham
Lord Mitchell
Lord Oxburgh (Chairman)
Lord Paul
Baroness Perry of Southwark
Baroness Platt of Writtle
Baroness Sharp of Guilford
Lord Soulsby of Swaffham Prior
Lord Sutherland of Houndwood
Lord Turnberg
† Lord Tombs
Baroness Walmsley
Lord Winston
Lord Young of Graffham

* Co-opted member
† Co-opted members for this inquiry only

Declarations of Interest:

Baroness Finlay of Llandaff

Employed at the Velindre NHS Trust, and has undertaken a review of strontium in the management of bone metastases

Lord Flowers

Member, United Kingdom Atomic Energy Authority 1970-80
Chairman, Royal Commission on Environmental Pollution 1973-76

Lord Jenkin of Roding

Chairman, Foundation for Science and Technology
Member, Supporters of Nuclear Energy (SONE)

Lord Lewis of Newnham

Chairman, Onyx Environmental Advisory Board

Baroness Sharp of Guildford

Visiting Fellow, Science Policy Research Unit, University of Sussex

Lord Tombs

Honorary Member, British Nuclear Energy Society
Chairman, South of Scotland Electricity Board
Chairman, Electricity Council 1977-80

APPENDIX 2: LIST OF WITNESSES

The following witnesses gave oral evidence:

Department for Environment, Food and Rural Affairs

Mr Elliot Morley, MP

Mr Chris de Grouchy

Committee on Radioactive Waste Management

Mr Gordon MacKerron

Mr Adam Scott

Ms Jenny Watson

APPENDIX 3: VISIT TO IPSWICH

17 September 2004

The visiting party consisted of Lord Broers, Lord Flowers, Lord Jenkin of Roding, Lord Lewis of Newnham, Lord Paul, Baroness Perry of Southwark, Baroness Platt of Writtle, Lord Tombs (acting as Chairman) and Baroness Walmsley.

In the morning the Committee attended a public meeting of the Committee on Radioactive Waste Management. This was followed by an informal lunch. In the afternoon the Chairman of CoRWM, Gordon McKerron, made a short presentation, and then invited Members of the Committee to ask questions.

On **public engagement**, Mr McKerron commented that it was easy to learn the views of stakeholders, but engaging with the public was much more difficult. The problem was to elicit views that were representative. Jenny Watson elaborated on some of CoRWM's techniques. Some relied on the public to act to make their views known. Others were more deliberative and educational, and involved CoRWM selecting panels and focus groups. The Committee sought the widest possible media coverage, and hoped it would be possible to overcome public cynicism.

It was argued that there was a difference between "public engagement" and market research. The methods currently being used were essentially the latter, relying on tiny "representative" samples. Gauging the views of the public was a more difficult and time-consuming process. In response, Mr McKerron noted that while mass engagement was likely to produce a quick response, smaller groups could engage in a longer, more educational process, showing how views could change over time.

Professor Blowers noted that public confidence was essential, in order to provide political legitimation for the Committee's final recommendations. But there was a further question of representativeness. Future generations also had an interest, which should in some way be "represented". The non-human environment was also concerned. Ms Watson noted that research showed many members of the public would be satisfied that their views had been represented as long as there was full involvement of NGOs.

Pete Wilkinson commented on the involvement of young people. Following an initiative by Bedfordshire County Council with regard to waste management, the Committee was looking for ways to solicit the views of school pupils. In addition, the Committee's work was being featured as part of the national curriculum. In response to a suggestion that CoRWM might look at holding meetings at universities, Ms Watson commented that the Committee would seek to use universities in the later stages of its consultation. In the meantime meetings were publicised in universities.

With regard to the media, Mr McKerron noted that the Committee had media advisers to assist in handling media portrayals of its work. One of the benefits of the deliberative approach to public engagement would be to encourage participants to go beyond immediate responses to media reports. It was essential that the right material should be made available, and the Committee was using expert assistance in preparing such material.

It was pointed out that if CoRWM wished to ensure the accessibility of its proceedings, it should seek to hold meetings in more accessible locations, with

better acoustics, and that its members should refrain from using obscure language during public meetings. Mr McKerron agreed that Ipswich Town Hall was not an ideal location, but pointed out that the Committee had a limited budget, and that Town Halls were both cheap and familiar to local residents. In future the Committee would seek to hold meetings in more accessible locations.

On **peer review**, Mr McKerron said that CoRWM was keen to secure as much diversity as possible among reviewers, at the same time as seeking to ensure that the process was conclusive and limited in scope.

On **timing**, he said that the proposed timetable was very ambitious. CoRWM had been given less than three years to complete its work, and was looking to accelerate earlier phases so as to complete the final phases on time. However, the members of the Committee, though paid, were part-timers, so it would not be easy.

RECENT REPORTS FROM THE HOUSE OF LORDS SCIENCE AND TECHNOLOGY COMMITTEE

Information about the Science and Technology Committee is available on **www.parliament.uk/hlscience/**, which also provides access to the texts of Reports.
General Parliamentary information is available on **www.parliament.uk**.

Session 2000–01

1st Report Science in Schools (follow-up to 3rd Report 1999–2000)
2nd Report Therapeutic Uses of Cannabis *(follow-up to 9th Report 1997–98)*
3rd Report Resistance to Antibiotics *(follow-up to 7th Report 1997–98)*
4th Report Human Genetic Databases

Session 2001–02

1st Report Managing Radioactive Waste: the Government's consultation *(follow-up to 3rd Report 1998-99)*
2nd Report Science in Schools: Government Responses
3rd Report What on Earth? The threat to the science underpinning conservation *(follow-up to 1st Report 1991-92)*

Session 2002–03

1st Report Managing Radioactive Waste: Government Response
2nd Report Chips for Everything: Britain's opportunities in a key global market
3rd Report What on Earth? The threat to the science underpinning conservation: The Government's response and the Committee's commentary
4thReport Fighting Infection
5th Report Science and the RDAs: SETting the Regional Agenda

Session 2003-04

1st Report Chips for Everything: follow-up
2nd Report Science and the RDAs: follow-up
3rd Report Science and Treaties
4th Report Renewable Energy: Practicalities

Printed in the United Kingdom by The Stationery Office Limited
12/2004 992242 19585