

# Nuclear Free Local Authorities **RADIOACTIVE WASTE POLICY**

## **Briefing No. 26 – DECC consultation on exemptions**

Prepared for NFLA member authorities, 20<sup>th</sup> September 2010

### **Environment Agency Consultation on exemptions regime for radioactive substances.**

*This briefing has been developed for NFLA member authorities in order to be able to respond to the Department of Energy and Climate Change and Devolved Administrations consultation on a proposed exemptions regime for radioactive substances. It has been prepared for the NFLA by its Policy Advisor, Pete Roche, in association with the Friends of the Earth Cumbria and former NIREX researcher, Rachel Western.*

#### **1. Details of consultation**

The Department of Energy and Climate Change and the Devolved Administrations have published a consultation about proposals for an exemptions regime for radioactive substances. The consultation closes on 6<sup>th</sup> October 2010.

The consultation document: “Revised Proposals for a Future Exemptions Regime under the Radioactive Substances Act 1993 and the Environmental Permitting Regulations 2011” can be found at:

<http://www.decc.gov.uk/assets/decc/What%20we%20do/UK%20energy%20supply/Energy%20mix/Nuclear/radioactivity/exemption/390-revised-exemptions-regime-engagement-doc.pdf>

A package of documents which was published at the same time, including Draft Regulations for England and Wales, Scotland and Northern Ireland and Draft Government guidance to regulators, can be found at:

[http://www.decc.gov.uk/en/content/cms/what\\_we\\_do/uk\\_supply/energy\\_mix/nuclear/radioactivity/decc/legislation/exempt\\_review/stakeholder/stakeholder.aspx](http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/nuclear/radioactivity/decc/legislation/exempt_review/stakeholder/stakeholder.aspx)

Responses should be submitted by **6<sup>th</sup> October 2010** to:  
[EO-Review@decc.gsi.gov.uk](mailto:EO-Review@decc.gsi.gov.uk) or

EO Review Team  
Area 3C  
Department of Energy and Climate Change  
3-8 Whitehall Place  
London  
SW1A 2HH

#### **2. Background**

The July 1995 Radioactive Waste Management White Paper said it has been decided “*not to encourage greater use of controlled burial by the nuclear industry*” on landfill sites. (1) This was superseded in March 2007 by a new Government White Paper on Low Level Waste Policy which said it “...sees no reason to preclude controlled burial of radioactive waste from nuclear sites from the list of options to be considered in any options’ assessment”. (2) As a consequence this consultation is taking place against the background of a proliferation of proposals to permit low level radioactive waste to be dumped on various landfill sites around the country. (3)

The corporate sector has already started looking for opportunities presented by this new policy. Leading waste management firms such as the French-owned Sita group and the American company, Energy Solutions, are trying to press ahead with plans to use landfill facilities in Cumbria at Keekle Head and Lillyhall for dealing with waste from Sellafield and elsewhere. (4) Sita is proposing to bury one million cubic metres of low level nuclear waste at Keekle Head with 12 lorry loads of waste arriving at the site every day for 50 years. The waste would include rubble, contaminated soil, contaminated concrete, overalls, gloves and boots. The lorries would not be just from nearby Sellafield but also from other parts of the UK, causing unreasonable disturbance and risk to the local population. The Company accepts that if their planned dump goes ahead there will be risks to local people or “receptors”, as radioactivity will dissolve, get into the water supply – and may reach the local population. (5)

Villagers in Northamptonshire are campaigning against the use of the landfill site at King’s Cliffe for radioactive waste from the nuclear industry. (6) Augean, the company that operates the landfill, wants to accept contaminated rubble from decommissioned nuclear sites around the country. The firm says 30,000 tonnes a year in large plastic construction bags is earmarked, initially from the former nuclear research plant at Harwell, near Oxford. Northamptonshire County Council Development Control Committee unanimously rejected Augean’s application to dump Low Level Nuclear Waste in the King’s Cliffe landfill on 16th March 2010, but Augean appealed against the decision. (7) A public inquiry will start on 26<sup>th</sup> October 2010. (8)

Obviously one of the easiest ways to increase the amount of waste going to landfill is to increase the level below which waste is declared to be not radioactive and therefore can be removed from regulatory control. This appears to be part of what is being proposed in this new consultation.

### **3. Nuclear Decommissioning Authority Strategy**

The Nuclear Decommissioning Authority (NDA) published its finalised “UK Strategy for the Management of Solid Low Level Radioactive Waste (LLW) from the Nuclear Industry” on 26<sup>th</sup> August 2010. (9) This followed an earlier consultation on its draft strategy, (10) which set out a framework for the so-called ‘flexible’ management of LLW.

In its response to the NDA consultation (11) the NFLA noted its concern that, given the large volumes of lower level wastes, there is likely to be pressure to introduce unacceptable management techniques, (12) including increasing the amount of wastes going to landfill, and a proliferation of smaller dumps for LLW around the UK, as well as pressure to lower standards for site remediation in an attempt to reduce the volumes of waste generated and their associated ‘disposal’ costs. With significant quantities of potentially valuable metals arising from decommissioning, there is also likely to be pressure to allow increases in discharges of liquid radioactive waste into the marine environment, and gaseous emissions to the atmosphere, as a consequence of decontamination processes for metals earmarked for recycling.

The NDA’s “Post Consultation Response”, also published in August, responds to comments made during the consultation. (13) Whilst some of the NFLA’s concerns are noted, for example, a “*genuine stakeholder concern*” over the safety of reuse and recycling options and an apparent “dispersal” of radioactive material, the NDA simply notes the need for policy to be “*implemented within the legal framework ... to protect people’s interests in this area (safety and security for people and the environment)*”.

Apart from a change of emphasis here and there, the NDA did not propose making any significant changes to the Strategy to answer the NFLAs concern. It says, for example:

*“We have presented a series of disposal options to be considered on a case-by-case basis. These options include in-situ disposal; specified landfill or incineration, locally, regionally or nationally (e.g. VLLW); on-site or adjacent to site disposal (e.g. decommissioning rubble); or other near surface facilities, locally, regionally, or nationally ... it will be incumbent on the waste producer to demonstrate health, safety, security, environmental and regulatory compliance.”* (14)

On the use of landfill for Very Low Level Waste (VLLW) and LLW, the importance of public acceptability is mentioned. The draft strategy effectively said it will make use of opportunities as they arise if they can be demonstrated to be BPEO (Best Practicable Environmental Option) by the waste producer. The final strategy continues to include the option of landfill 'disposal' in the range of available options, as well as the option of on-site 'disposal', where waste requires final un-retrievable 'disposal'. There is no reference to the NFLA's view that on-site waste management should mean "*the development of purpose-designed facilities under the supervision of nuclear site management.*"

Unlike the draft, the final strategy document only uses the word 'flexible' three times. Instead it talks about the "*need for new fit-for-purpose waste management routes*". This approach is still likely to have the same effect which "insiders", according to *The Guardian*, say is **almost certain to switch to more waste into landfill and other sites not used in the past.** (15)

#### 4. The Existing System

The current system sets a radioactivity limit for LLW, below which waste is not required to be subject to specific regulatory control. For certain natural radionuclides in the uranium and thorium decay chains, the levels are specified in Schedule 1 of Radioactive Substances Act 1993 (RSA93) below which the substances are outside the scope of the Act. For other artificial or man-made radionuclides, the levels laid down in a suite of Exemption Orders issued under RSA93, below which controls additional to those specified in the Exemption Order, are not required. The most notable of these is the Substances of Low Activity (SoLA) Exemption Order. This specifies a level for exemption from regulatory control of 0.4 becquerels per gram (Bq/g) for wastes which are substantially insoluble in water. (For comparison: sheep contaminated by the Chernobyl accident in 1986 are not permitted to be sold for food if contaminated above 1Bq/g - usually expressed as 1,000Bq/kg).

#### 5. The Proposed System

The new system proposes to list substances and the level above which they will be subject to regulatory control. Unless substances and articles are specifically brought into the scope of regulation, they are not considered to be radioactive. The draft legislation for England and Wales includes two tables which give lists of radionuclides with the concentration (e.g. Bq/g) below which they are exempt from regulatory control.

For a substance to be considered a radioactive material or waste it must fall into one of three categories: (a) Naturally Occurring Radioactive Material (NORM) which has been used or has arisen in a NORM industrial activity (such as the production of oil and gas), and must contain the radionuclides listed in Table 1 (such as uranium, thorium and radon) above the specified concentrations; (these industries tend to concentrate natural radionuclides to levels above anything found in nature) (b) Radionuclides listed in Table 2 which are processed for their fissile or fertile properties,<sup>1</sup> and which are in concentrations above those listed in Table 2; and (c) Artificial radioactive substances listed in table two above the concentrations listed.

The dose criterion used to derive the level above which a substance is of regulatory concern for Naturally Occurring Radioactive Material (NORM) is 300 microsieverts per year.<sup>2</sup> For artificial radioactive substances (or naturally occurring radioactive substances which have been used for their "fertile or fissile" properties) this falls to 10 microsieverts per year (10µSv/yr). The Government justifies this difference by referring to a Euratom expert committee which said it would be impractical to regulate natural radioactivity on the basis of such a "trivial" risk. (16)

The changes to the regime as far as NORM is concerned appear to be relatively minor. However, in the Draft Legislation for England and Wales (Appendix 1) (17) Table 2 lists radionuclides<sup>3</sup> and

<sup>1</sup> the ability of an atom to decay radioactively, to split or to become another atom through absorption of a neutron are all properties of its central nucleus. The capacity to split is also known as being 'fissile' and the capacity to take up a neutron is known by nuclear physicists as being 'fertile'

<sup>2</sup> This figure is known as the single source dose constraint, which is the restriction on annual dose to an individual from a single source which must be applied at the design and planning stage for any new nuclear facility.

<sup>3</sup> Schedule 1, Section 2B has the headline "Processed radionuclides of natural terrestrial or cosmic origin". This is incorrect as the list in Table 2 includes artificial radionuclides.

gives a concentration level in becquerels per gram below which the substances are exempt from regulatory control. Whereas the previous Radioactive Substance (Substances of Low Activity) Exemption Order 1986 exempted all solid wastes which were substantially insoluble in water if the activity was below 0.4Bq/g, Table 2 gives a range of concentration levels depending on the specific radionuclides in question. Occasionally the concentrations proposed are as low as 0.1Bq/g or even 0.01Bq/g but many are several orders of magnitude higher – in a few cases up to 10,000 Bq/g. This means that waste with much higher concentrations of radioactivity could end up going to landfill without any regulatory controls.

## 6. Very Low Level Waste

In the 1995 Radioactive Waste Management Policy White Paper (Cmnd 2919) 'Very Low Level Waste' (VLLW) was defined as waste which could be safely disposed of with ordinary refuse. Each 0.1m<sup>3</sup> of material had to contain less than 400 kilobecquerels (KBq) of beta/gamma activity or for single items less than 40kBq. Alpha-bearing waste would normally have been excluded from this category. Controls on this material once it had left the premises where it was created are not necessary. Controlled burial of some Low Level Waste which were above the limits for dustbin disposal, but this was principally for waste arising from the non-nuclear sector. (18)

The 2007 Government Policy Statement on Low Level Waste made some important change to this definition. Firstly it removed any mention of the type of radioactivity, which means that alpha-bearing waste could fall into this category – so plutonium contaminated material, for example, could now theoretically be disposed of on a landfill site. Secondly, it added High Volume VLLW which is defined as:

*“Radioactive waste with maximum concentrations of four megabecquerels per tonne (MBq/te) of total activity which can be disposed of to **specified** landfill sites. For waste containing hydrogen-3 (tritium), the concentration limit for tritium is 40MBq/te. Controls on disposal of this material, after removal from the premises where the wastes arose, will be necessary in a manner specified by the environmental regulators.”* (19)

## 7. Dose Assessments

The Department of Energy and Climate Change (DECC) asked the Health Protection Agency to investigate the amount of NORM waste that could be disposed of to landfill without exceeding specified dose criteria. (20) The naturally occurring radionuclides considered by HPA are listed in their document.

But the draft legislation also refers to artificial radioactivity created in nuclear reactors – a much larger group of radionuclides than those considered by the HPA. Paragraph 16 of the Guidance Document (21) suggests that the exemption levels of even the artificial radionuclides are based on the HPA dose assessment carried out for NORM. So it is not clear whether the Health Protection Agency has carried out dose assessments for the artificial radionuclides actually listed in the draft legislation.

There is also an implication that the dose assessments used to derive the exemption levels for these other radioactive substances are derived from the Euratom Radiation Protection Series Document 122 (22) But it is not clear what confidence we can have in these assessments. In other words, it is not clear what confidence we can have that even if a radionuclide appears in concentrations below the specified level in table 2, that it will still meet the dose criterion of less than 10microsieverts per year.

This is a particular concern when the draft legislation specifically excludes doses from background including the doses that arise from Chernobyl, nuclear testing or discharges from nearby nuclear facilities are ignored when calculating these dose assessments.<sup>4</sup> Stakeholders were told at a recent workshop that **some waste, which it will be permitted to send to landfill, could set off radiation alarms installed at landfill sites to detect unauthorised 'disposals'**.

---

<sup>4</sup> Para 2.24 of the Guidance (Appendix 4) talks about artificial background which can be ignored which is defined as those radionuclides which are ubiquitous in the environment as a result of environmental processes such as the circulation of the oceans and the atmosphere. See also para 2.13 & 4.18  
NFLA Radioactive Waste Briefing 26

The relationship between the HPA Dose Assessment, the Euratom Radiation Protection Series Document 122 and the radionuclides referred to in the Draft Law requires clarification.

Setting standards on the basis of dose involves making assumptions about lifestyles and habits, so is subject to huge uncertainties. For example, in the case of setting a standard for the release of metals for recycling, estimating the dose to the public might involve assuming the metal is used in a frying pan, estimating the corrosion rate of the metal and the hours spent per year cooking. Estimates would also have to be made of the dose received by the metal workers turning the metal into consumer goods. Could the public be confident that even if the metal was used to manufacture medical instruments or children's toys that doses would still represent an acceptable risk?

## **8. Once Disposed of – a Dump Could Leak**

Under the draft legislation, once radioactive waste is legally disposed of – then it is no longer radioactive. – however if the dump leaks in a way that hadn't been predicted and as a result people are exposed to radiation – then the waste is radioactive after all. Clearly such logic should have no place in legislation that is meant to provide robust protection of the public from the dangers of radioactivity.

## **9. Buried Radioactivity and Sub-Standard Protection**

Whilst in use radioactive materials should be labelled, and any loss or theft should be reported to the regulator. However, under the draft legislation:

*“The discovery of **trefoil labelling [indicating radioactivity] in a conventional landfill can be wasteful of regulatory (or even police) resources.** The intent is therefore that radioactive waste is not labelled when the destination is one where substantial quantities of non- radioactive waste are disposed.”*

This means that radioactive materials which are sufficiently dangerous enough that, whilst they are being used, their loss or theft needs to be reported; suddenly become sufficiently safe after dumping that their radiation levels can be removed. In fact, in some situations, dump site operators may not even know that their dump contains radioactive wastes. (24)

## **10. Conclusion**

These proposals need to be examined in the context of a Government policy of allowing more radioactive waste to be disposed of in ordinary landfill sites.

Government policy has already widened the definition of Very Low Level Waste which can be buried in landfill sites with ordinary refuse to allow much larger volumes to be disposed of and to remove the restriction on alpha bearing waste, which means that plutonium wastes may be buried in landfill.

These new proposals would change a system where the limit was 0.4Bq/g, to one where the limit could be as high as 10,000 Bq/g in some cases.

Different radionuclides have different biological effects, so it might be possible to argue a case in favour of some of these high concentrations if we could be sure that the dose assessments carried out are reliable. However dose assessments are unreliable at the best of times, moreover in this case it looks as though dose assessment carried out for Naturally Occurring Radioactive Material have been used to justify the exemption levels for artificial radionuclides.

The Consultation documents are very ambiguous and hard to follow. It is imperative that these issues are clarified before the law is changed in a way that is unduly detrimental to health.

Particular areas of concern in the proposed legislation are that:

- It is drafted under the assumption that dumping can be allowed to go ahead – in the full knowledge that the dump could leak in a way that hadn't been anticipated
- Waste that are so dangerous that whilst in use their loss needs to be reported should be dumped without any labelling
- Dump site operators may have no idea that their dump site contains radioactive wastes.

The Nuclear Free Local Authorities has consistently argued that a policy of 'dilute and disperse' as a form of radioactive waste management (i.e. discharges into the sea or atmosphere) should be rejected in favour of a policy of 'concentrate and contain' (i.e. store safely on-site). It also rejects the idea that radioactive waste can be "disposed" of, and supports a policy which instead continues to manage radioactive waste. Exempting radioactive waste from regulatory control or allowing it to be buried on landfill sites are simply ways of diluting and dispersing radionuclides throughout the environment and should be rejected.

## 11. References

- (1) Review of Radioactive Waste Management Policy: Final Conclusions, Cm2919, HMSO July 1995, para 117. (2) Policy for the long term management of solid low level radioactive waste in the United Kingdom, DEFRA, DTI and Devolved Administrations, March 2007. Para 19  
<http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/nuclear/radioactivity/llw-policystatement070326.pdf>
- (3) Low Level Waste Dump Proliferation. NuClear News No.12 November 2009  
<http://www.no2nuclearpower.org.uk/nuclearnews/NuClearNewsNo12.pdf>
- (4) Low Level Waste Dump Proliferation, NuClear News No.18, May 2010  
<http://www.no2nuclearpower.org.uk/nuclearnews/NuClearNewsNo18.pdf>
- (5) Carlisle News and Star 27th April 2010  
<http://www.newsandstar.co.uk/news/nuclear-waste-dump-would-cause-unreasonable-risk-claims-copeland-green-candidate-1.700597>  
Get Noticed Online 26th Apr 2010  
<http://www.getnoticedonline.co.uk/news/general-news/copeland-candidate-objects-to-nuclear-waste-plan.html>
- (6) BBC 23rd October 2009 <http://news.bbc.co.uk/1/hi/england/northamptonshire/8321112.stm>
- (7) See Kings Cliffe Waste Watchers website: <http://www.kingscliffewastewatchers.co.uk/>
- (8) Northamptonshire County Council 12<sup>th</sup> August 2010  
<http://www.northamptonshire.gov.uk/en/councilservices/Environ/planning/planapps/Pages/CurrentAppeals.aspx>
- (9) <http://www.nda.gov.uk/news/llw-strategy.cfm>
- (10) The NDA's consultation on its Draft LLW Strategy took place from June to November 2009  
[http://www.nda.gov.uk/consultations/details.cfm?customel\\_datapageid\\_28748=28818](http://www.nda.gov.uk/consultations/details.cfm?customel_datapageid_28748=28818)
- (11) Radioactive Waste Briefing No.20  
<http://www.nuclearpolicy.info/docs/radwaste/RadWaste20.pdf>
- (12) See also Decommissioning a Lower Level Radioactive Waste, Radioactive Waste Policy No.11 August 2004. <http://www.nuclearpolicy.info/docs/radwaste/C3k.pdf>
- (13) UK Strategy for the management of solid low level radioactive waste from the nuclear industry, Post Consultation Response, August 2010. <http://www.nda.gov.uk/documents/upload/UK-Strategy-for-the-Management-of-Solid-Low-Level-Radioactive-Waste-from-the-Nuclear-Industry-Post-Consultation-Response-August-2010.pdf>
- (14) *ibid*, para 2.7 page 15.
- (15) Guardian 19<sup>th</sup> October 2009. <http://www.guardian.co.uk/environment/2009/oct/19/nuclear-waste-storage-needs>
- (16) Revised proposals for a future exemptions regime under the Radioactive Substances Act 1993 and the Environmental Permitting Regulations 2011: Engagement Document, DECC August 2010. para 2.10 page 6  
<http://www.decc.gov.uk/assets/decc/What%20we%20do/UK%20energy%20supply/Energy%20mix/Nuclear/radioactivity/exemption/390-revised-exemptions-regime-engagement-doc.pdf>

(17)

<http://www.decc.gov.uk/assets/decc/What%20we%20do/UK%20energy%20supply/Energy%20mix/Nuclear/radioactivity/exemption/391-revised-exemptions-regime-app1.pdf>

(18) Advice to Ministers on Management of Low Activity Solid Radioactive Wastes within the United Kingdom, RWMAC, March 2003.

(19) For full details see Policy for the Long Term Management of Solid Low Level Radioactive Waste in the UK, DEFRA, DTI & Devolved Administrations. 26<sup>th</sup> March 2007

<http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/nuclear/radioactivity/llw-policystatement070326.pdf>

(20) T Anderson and S Mobbs 'Conditional Exemption Limits for NORM Wastes'

HPA – CRCE – 001 – ( June 2010 ) Abstract

<http://www.hpa.org.uk/Publications/Radiation/CRCEScientificAndTechnicalReportSeries/HPACRC E001/>

(21) Draft guidance on exemptions framework under the Radioactive Substances Act 1993 (Schedule 23 to the Environmental Permitting (England and Wales) Regulations 2011), Guidance Document. Para 16, page 37.

<http://www.decc.gov.uk/assets/decc/What%20we%20do/UK%20energy%20supply/Energy%20mix/Nuclear/radioactivity/exemption/394-revised-exemptions-regime-app4.pdf>

(22) [http://ec.europa.eu/energy/nuclear/radiation\\_protection/doc/publication/122\\_part1.pdf](http://ec.europa.eu/energy/nuclear/radiation_protection/doc/publication/122_part1.pdf)

and [http://ec.europa.eu/energy/nuclear/radiation\\_protection/doc/publication/122\\_part2.pdf](http://ec.europa.eu/energy/nuclear/radiation_protection/doc/publication/122_part2.pdf)

(23) Draft guidance on exemptions framework under the Radioactive Substances Act 1993 (Schedule 23 to the Environmental Permitting (England and Wales) Regulations 2011), Guidance Document. Page 14, paras 2.3.1 & 2.3.2 See also page 8, para 2.2.

<http://www.decc.gov.uk/assets/decc/What%20we%20do/UK%20energy%20supply/Energy%20mix/Nuclear/radioactivity/exemption/394-revised-exemptions-regime-app4.pdf>

(24) Draft guidance on exemptions framework under the Radioactive Substances Act 1993 (Schedule 23 to the Environmental Permitting (England and Wales) Regulations 2011), Guidance Document. See paras 3.10, 3.13, 3.14, 3.23, 3.24 & 3.51

<http://www.decc.gov.uk/assets/decc/What%20we%20do/UK%20energy%20supply/Energy%20mix/Nuclear/radioactivity/exemption/394-revised-exemptions-regime-app4.pdf>