

## Revised Exemption Regime and Future SAFESPUR Events

### Note of SAFESPUR Meeting Palace Hotel, Manchester, 8 November 2011

This meeting was chaired by Peter Booth, who is Senior Technical Director at WSP Environment & Energy. It was in two parts. In the morning there were four presentations from key players in establishing and implementing the revised regime for exempting radioactive materials and wastes from regulation. In the afternoon there was a discussion of potential SAFESPUR events for 2012.

#### REVISED EXEMPTION REGIME

##### *A Policy Perspective on the Revised Regime*

This first presentation was by Steve Chandler of the Department of Energy and Climate Change (DECC), which had led the revision of the exemption regime. He began by listing the relevant legislation:

- for England and Wales, the Environmental Permitting (England and Wales) Amendment Regulations 2011 (SI 2011 No. 2043)
- for Scotland, the Radioactive Substances Act 1993 Amendment (Scotland) Regulations 2011 and the Radioactive Substances Exemption (Scotland) Order 2011 (SSIs 2011 Nos. 207 and 147)
- for Northern Ireland, the Radioactive Substances Act 1993 (Amendment) Regulations (Northern Ireland) 2011 and the Radioactive Substances Exemption (Northern Ireland) Order 2011 (SR&Os 2011 Nos. 290 and 289).

Although there is separate legislation for Scotland and Northern Ireland, the regime is the same throughout the UK so there is only one Government guidance document and one set of regulatory guidance documents. The Government guidance is on the Defra website and the regulatory guidance is on the websites of the three environment agencies. The two principal parts of the regime are the revised definitions of radioactive materials and radioactive wastes and the revised exemptions.

##### *Revised Definitions of Radioactive Materials and Radioactive Wastes*

In the new regime, materials and wastes are only radioactive for legal purposes if:

- they are derived from NORM<sup>1</sup> industrial activities (listed in the legislation), practices using NORM or practices using artificial radionuclides and
- they have activities above the thresholds given in the legislation.

There are also exclusions for radionuclides with very short half lives (less than 100 seconds), for background concentrations of artificial radionuclides, for previous lawful disposals and for materials that become contaminated on premises.

##### *Revised Exemptions*

The new regime provides conditional exemptions for the keeping and use of radioactive materials and specific items, and for disposals of solid wastes, articles, bulk NORM, aqueous liquids, and gases. In each case there are numerical exemption levels. There are also exemption provisions for mobile

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<sup>1</sup> NORM – naturally occurring radioactive materials.

apparatus, waste accumulation and storage in transit. The conditions for exemption cover topics such as record keeping, secure storage, labelling and notification of loss or theft.

### *Government Guidance*

The Government guidance on the revised regime is easier to navigate and understand than the legislation. It was produced with the assistance of environmental regulators and industry experts. It covers, at the concept level, topics such as the deduction of background, measurement and averaging. These are dealt with in more detail in the regulatory guidance.

### ***A Regulator's Viewpoint on the Revised Regime***

This second presentation was given by Adam Stackhouse of the Scottish Environment Protection Agency (SEPA), who spoke on behalf of all three environment agencies. He dealt with the effects of the changes in legislation and with the contents of regulatory guidance.

### *Effects of Changes in Legislation*

The new legislation came into force on 1 October 2011 but transitional provisions apply until 31 March 2012. Until that date it is possible to use either the new or the old definitions and exemptions. However, once a new exemption is being used for a particular type of substance, it is not possible to revert to using the old exemption for that type of substance. After the transitional date only the new definitions and exemptions can be used, with the exception of those operators who have submitted an application for a new permit or variation as a result of the legislative changes. In that case the old exemptions can be used until the application has been determined.

For the nuclear industry, the most important changes are to the definitions of radioactive materials and radioactive wastes. Reasons for these changes included making the regime risk-informed and making it more transparent, thus avoiding differing interpretations in different parts of the UK. The replacement of the single 0.4 Bq/g level for all artificial radionuclides with radionuclide-specific levels will produce "winners" and "losers" as far as ease of disposal of wastes is concerned. It is important that all wastes that are not "radioactive" under the revised regime are now consigned as non-radioactive. Operators should consult their environment agency inspectors about wastes that had been characterised before 1 October 2011, with a view to agreeing a pragmatic way forward.

Another notable change is that all low volume very low level waste (LV-VLLW) is now exempt (regardless of which type of site it originates from) and that the limit on the quantity of LV-VLLW that can be disposed from premises in a year is in terms of activity, not volume.

The conditions in current environmental permits/authorisations take precedence over exemptions. Operators are advised to talk to their environment agency inspectors if they feel there could be advantages in surrendering their permit/authorisation in order to use the new exemptions.

### *Regulatory Guidance*

The environment agencies have already published guidance on: VLLW, waste sealed sources, small sealed sources, small amounts of open sources, uranium and thorium, medical and veterinary use of radioactive sources, and radioactivity in museums. Topics on which guidance is planned include: NORM, aqueous waste, storage in transit, waste characterisation, smoke detectors and gaseous tritium light devices.

For the nuclear industry, the key guidance is likely to be that on waste characterisation. This will include guidance that the environment agencies consider is required in general, as well as guidance that is specific to the new regime. The intention is to consolidate best practice and to bring into one document guidance that is now in several different Environment Agency and SEPA documents. It is likely that the guidance will contain overarching principles (e.g. ALARA/BAT/BPM<sup>2</sup>, use of the Waste Hierarchy) and specific principles (e.g. on use of BAT to characterise wastes, use of the history and

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<sup>2</sup> ALARA – as low as reasonably achievable; BAT – best available techniques; BPM – best practicable means.

provenance of waste in its characterisation, selection of appropriate measurement techniques and sampling strategies). There will also be further guidance on dealing with the natural and artificial background, and on averaging.

### ***An Industry Perspective on the Revised Regime***

This presentation was given by Chris Fayers of Magnox, who is chair of the Clearance and Exemption Working Group (CEWG) set up by the nuclear industry's Safety Directors' Forum. He noted that there had been significant and positive engagement of the industry with DECC throughout the review and revision of the exemption regime. He also thanked DECC and the regulators for their inclusive approach.

From a nuclear industry point of view, the key changes brought in by the revised regime are:

- the new definitions of radioactive materials and wastes, which provide clearer exclusions from regulation
- risk-based numerical levels, linking back to the EU Basic Safety Standards, which produce some winners and some losers
- the descriptive exclusions for background and for contamination from normal discharges, which provide a legal basis for current practice
- the LV-VLLW exemption
- the aqueous liquid exemption, which is limited but is a step forward
- the treatment of non-aqueous liquids (e.g. oils, mercury) as solids for the purposes of exemption.

The Government and regulatory guidance on the new regime is helpful and gives formal recognition to some industry concepts and practices, while leaving the basic framework for managing radioactive wastes unchanged. The revised regime is expected to give rise to some new opportunities for managing wastes but these would be limited.

The Nuclear Industry Code of Practice (NICO<sub>P</sub>) on clearance and exemption, which is widely used, is being revised to reflect the new regime. The management principles in the NICO<sub>P</sub> and much of the advice remain appropriate and robust. However there will be changes to the specific advice on legislation and on numerical levels. The opportunity is also being taken to include revised advice on statistics and to add advice on the use of fingerprints, which are particularly important in complying with the new regime.

### ***Practical Implications of the Revised Regime***

This last presentation was by Pete Burgess of Nuvia. He welcomed the new regime as more logical and defensible, and leading to better use of resources (e.g. sending less low toxicity waste to the Low Level Waste Repository (LLWR)). Overall, the regime is expected to be no more difficult to implement at the practical level. In many situations compliance with the old regime relied on the measurement of the activities of one or two easily detectable radionuclides and the use of fingerprints to infer the activities of others. This is the same in the new regime, but it is more important to ensure the fingerprints are correct. It is sensible to consult radiochemists about fingerprints, to reduce the risk of missing radionuclides that may be present but are difficult to detect ("if you are not looking for it you won't find it").

There are various circumstances in which it will now be possible to deal with more waste as non-radioactive. One example is activated steel containing cobalt-60, iron-55 and nickel-63. Under the old regime iron-55 and nickel-63 had to be considered in determining compliance with the 0.4 Bq/g level. If there was 10 times more iron than cobalt, this would lead to an effective exemption level for cobalt-60 of 0.04 Bq/g. Under the new regime the exemption levels for iron-55 and nickel-63 are much higher and the effective exemption level for cobalt-60 becomes close to 0.1 Bq/g, allowing more steel to be cleared. Furthermore, it is easier to measure cobalt-60 at the 0.1 Bq/g level, and it is less important to know the iron-55 and nickel-63 content accurately, so clearance is simpler. Another example is concrete contaminated only with tritium, because the tritium exemption level in the new regime is 250 times that in the old (100 Bq/g compared to 0.4 Bq/g).

However, there may be difficulties with wastes containing high toxicity radionuclides with exemption levels of 0.01 Bq/g. The main situations of concern are where wastes contain all the radionuclides in the uranium-238, uranium-235 or thorium-232 chains, or radium-226 and its daughter products. These can occur at sites where nuclear fuel is manufactured, at old research establishments and where radium luminised instruments have been made, maintained or disposed of (e.g. old airfields). 0.01 Bq/g is generally below the limit for *in situ* gamma detection. Also, radionuclides in the uranium and thorium series are present naturally in building materials and soils, so it may not be possible to distinguish any additional activity. Much will depend on whether regulators are content with an approach of “if it looks like background, it is background”.

A further difficulty would be if the new EU Basic Safety Standards Directive imposes the exemption levels in IAEA-RS-G-1.7. The IAEA levels for some radionuclides differ from those in the new UK regime. In particular, the caesium-137 level is 0.1 Bq/g, not 1 Bq/g. This would mean that less waste containing fission products could be cleared. The Directive is currently being considered by EU Member States. It is expected to be adopted and come into effect in 2012, which would mean that it would have to be implemented in the UK in 2014.

The new regulatory guidance on waste characterisation would require much discussion, especially the guidance on sampling and averaging. One key issue would be the importance of keeping buildings intact for characterisation, rather than demolishing them and characterising the wastes. It is easier to make measurements on intact buildings, and easier to compare activity levels in a potentially contaminated building with those in one that is known not to be contaminated.

### **Q&A on the Revised Exemption Regime**

#### *Apparent Inconsistency between Definitions of VLLW and Radioactive Waste*

It was pointed out that some wastes that are included in the definitions of VLLW in the 2007 LLW Policy document are not “radioactive wastes” under the new regime. (For example, in the new regime wastes with less than 100 Bq/g tritium are not radioactive but in the LLW Policy document the concentration limit for tritium in high volume VLLW is 40 Bq/g.) Steve Chandler said that the legal definition took precedence and there were no plans to revise the 2007 LLW Policy document. It was suggested that it would be useful to include a statement to this effect in Government or regulatory guidance.

#### *NGO Views*

In response to a question about NGO views on the revised exemption regime, Steve Chandler said that there had been NGO representatives at the early workshops about the proposed changes to the regime but not the later ones. He thought that NGOs did not see the regime as a high priority because it had few implications for the nuclear industry. Some NGOs had opposed the changes to the regime because they did not agree with the assumptions on radiation risks behind the recommendations of the International Commission on Radiological Protection (ICRP), on which the exemption levels were based. There were also concerns about possible “hotspots” of contamination in cleared wastes. NGOs were strongly in favour of prohibiting deliberate dilution of wastes so as to comply with clearance levels.

#### *BAT and Clearance*

The question asked was whether the BAT principle applied to clearance, that is to confirming that a waste was not “radioactive” under the new regime. Adam Stackhouse replied that he thought it did.

#### *Use of the Waste Hierarchy*

A questioner asked whether the speakers thought that the new regime would influence how the Waste Hierarchy was applied. The answer was that the new regime could lead to more recycling of some wastes, because they are no longer classified as radioactive wastes (e.g. oils, some concretes). It was also reiterated that, in some circumstances, the new regime was easier to comply with than the old one.

### *Definitions of Waste and Material*

In answer to a question, Steve Chandler said that the definition of “waste” in the new legislation was the same as that in the old (i.e. as in the Radioactive Substances Act 1993 and its predecessor, the 1960 Act). This definition was specific to the radioactive substance regulation regime and easier to use than the definition of waste in the general waste regulation regime. A radioactive material did not become a waste until it was so declared. The exemption from registration of materials that become contaminated on premises was to avoid having to change registration details as contamination of the material changed. Once the material was declared waste, a permit/authorisation was required for its disposal.

### **POTENTIAL SAFESPUR EVENTS IN 2012**

Owen Jenkins of CIRIA gave a brief presentation on past and potential future SAFESPUR events. There was then a discussion of possible events on the following topics.

#### ***Recycling of Concrete***

CIRIA had prepared an outline of an event on recycling of concrete. This included presentations and discussions on: the quantities and activities of concrete arising on nuclear sites; characterisation issues; possible uses for the concrete on and off nuclear sites; practical, planning and regulatory constraints on concrete recycling; and the influence of public perceptions. There was general agreement that such an event would be very worthwhile.

#### ***Recycling of Metals***

CIRIA suggested that an event on metals could follow a similar format to the one on concrete and address similar issues. There was less enthusiasm for an event on metals because it was felt that recycling routes were well-established and their use was increasing. Also, the issues for metals recycling were well-understood and lessons learned were being applied.

#### ***Mixed Radioactive and Non-Radioactive Contamination on Land***

It had been suggested to CIRIA that there was little guidance that explicitly covered sites where there was both radioactive and non-radioactive contamination, and that at such sites less attention was paid to the non-radioactively contaminated land. Participants in the meeting felt that this was not the case. Although there were issues about non-radioactively contaminated land on nuclear sites that could be discussed (e.g. drivers for remediation, the role of Local Authorities as regulators), these were probably best addressed in other fora.

#### ***Technology Transfer from Other Countries***

The suggestion was to explore whether the UK was making sufficient use of decommissioning, waste management and land remediation technologies developed in other countries. One question was whether technology transfer was occurring through the involvement of foreign companies in running UK nuclear sites. Participants in the meeting said that some organisations had made considerable investments in developing and adapting technologies from abroad for UK use. It was also thought that knowledge transfer was as important as technology transfer. Some doubts were raised as to whether there could be open discussion of technology transfer, given the competitive nature of the market.

#### ***Focus on Sellafield***

It had been suggested to CIRIA that it would be worthwhile to hold one or more events on land remediation, decommissioning waste management and related issues at particular sites. Preliminary discussions had been held with Sellafield, because this is the largest and most complex nuclear site in the UK. This could be followed by events about other sites or groups of sites.

### ***New Build***

The suggestion was to hold an information meeting on progress on building new nuclear power stations in the UK, including progress in generic and site specific regulatory and planning processes. The event could cover designing for decommissioning and waste management, remediation of contaminated land to make space for new reactors, and other links between adjacent existing and new build sites.

### ***Lessons from Fukushima***

It was noted that some UK companies were becoming involved in remediation of land around the Fukushima power station and in other clean-up activities. It was felt that, in due course, it would be helpful to hold an event on lessons learnt.

### ***Revisiting Exemption Orders***

It was suggested that it would be worth holding an event on experience with the revised exemption regime. This could be late in 2012 or early 2013, when the regime had been in place for about a year.

## **CHAIR'S CONCLUDING REMARKS**

Peter Booth thanked everyone who had helped to organise and had participated in the workshop. He emphasised that SAFESPUR was a forum for its members and hoped that everyone would provide CIRIA with feedback on future events. He also asked participants to give CIRIA their views on the format of the day.

Note by Marion Hill for SAFESPUR  
15 December 2011

## **APPENDIX – INFORMATION ON FORTHCOMING GUIDANCE AND REGULATIONS**

The following guidance documents are due to be issued in 2012-13:

1. the additional **Regulatory Guidance on the revised exemption regime** (see page 2) – due out over the next few months/year
2. the revised version of **the Nuclear Industry Code of Practice on clearance and exemption** (page 3) – due out in 2012 (a version for comment fairly early in the year, with a final one later)
3. the revised **Statutory Guidance on the Part 2A regime** for contaminated land – due out in 2012 (could be fairly early in the year because the consultation on a draft closed in March 2011).

There is also the revised **EU Basic Safety Standards Directive**, which is now out in draft for consideration by Member States. It is due to be adopted in 2012, then will have to be implemented in the UK by 2014. There will be a Government consultation on legislation to implement the Directive. If the final version of the Directive is the same as the draft, there will have to be changes to some of the numerical exemption levels (see page 4).