Decommissioning in the Non-Nuclear Sector

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1.Introduction

Sites using radioactive material need to demonstrate to us that there is no radioactive legacy remaining when surrendering permits under EPR2010. There are also sites that have historic contamination which may need to be remediated. Radioactivity is included in the contaminated land part 2A regulations. Regulation can apply to sites that do not fulfil the part 2A regulations criteria. These sites could produce radioactive waste. Such waste may require a permit. This poster gives a guide of what operators and site owners should consider when surrendering a permit or remediating their sites.

Part 2A radioactive contaminated land

This only applies to exposed pathways to humans but includes radon and incidents. The local authority are responsible for classifying radioactive contaminated land. The vast majority of sites will not fall into the part 2A regulations and there are none classified as such in England and Wales at the moment. However there will be lots that will produce radioactive waste.
See our website for more on part 2A contaminated land.

What sites could produce waste or come under part 2A regs?

Sites used for luminising (especially with radium 226 paint) e.g. luminising factories and laboratories, some previous defence sites and places where luminising waste was buried or spread.

Sites working with NORM as an activity e.g. lighter flints, china clay, titanium dioxide, oil & gas industry.

Sites where Thorium was used e.g. gas mantle factories.

Industrial sites e.g. tin slag, mineral extraction.

Laboratories where radioactivity was buried in the past or there are buildings that are contaminated.

Pits and burial grounds associated with radioactive practices.

Hospitals and Universities.

The unexpected and tip offs.

For further info see Defra Industry profile, 2006, Industrial Activities Which Have Used Materials Containing Radioactivity

3. Methods

Issues and questions that may arise

Is the site classed as Contaminated land? Are there sufficient Land Quality Assessments and information for developers?
What is the history? What isotopes were used? Where? How much? When? For how long?
Will radioactive waste be generated on clean up? What about other contaminants? Clean up of contamination to what level?
What monitoring is required? What will the strategy be? Does groundwater need to be taken into consideration and monitored (by looking at a conceptual model)?
Are there Interested parties that need to be informed e.g. Local Authorities, MPs, local communities?
If we are leaving material in the ground how will this be recorded for the future? What corporate decisions need to be made by landowners?

Why leave material behind?

May be classed as waste from a NORM industrial activity (e.g. lighter flint production) with different out of scope values than NORM industrial practices (e.g. radium luminising).
Impractical to remove waste or remediate.
Remediation may pose unnecessary risks to operators, contractors or members of the public.
Other reasons.

Waste Hierarchy

Waste producers have a duty to follow the waste hierarchy which can be summarised in the following stages
Prevention
Preparing for re-use
Recycling
Other recovery
Disposal

More information can be found on our website.

Planning, what could be involved

A proper desk study is generally required. You will need to seek suitable advice and appoint competent people. Some of these may be in house but others may need to be contractors. There may then be several RPAs and other experts involved. Involve the regulator early as they will be able to advise on permits and other regulatory concerns. Importantly, understand what is required for the project to succeed.

Radioactive waste

Think what waste will be produced e.g. the type of waste and how much will be generated.
What regulation will cover this waste? Is accumulation required? What disposal routes are required?
Storage must be secure and appropriate. There must be a full assessment of Best Available Techniques – BAT.
There are 3 levels of waste, out of scope, exempt and waste that requires permitting.
Examples of types of waste; Exempt, Very low level waste, Low level waste.
Disposal possibilities for consideration; landfill, incineration, Low Level Waste Repository.
Procedures will be required to ensure correct characterisation, accumulation and disposal of waste.
What if the radioactive waste is also Hazardous waste? Consider if a watching brief is required.

Compliance

Full compliance is required to limitations and conditions of permits and exemption orders.
This will include compliance documents, statements organograms and SOPs amongst others.
Agreements will need to be in place between different parties working on the project.

The permit holder is responsible for all compliance. Enforcement action can also be taken against operators who do not follow the conditions of the exemption order.

A thorough management system is required.

2.Objectives

Aims from a regulator's viewpoint

1. To ensure operators can surrender their permits without leaving a radioactive legacy
2. To ensure that contaminated sites when identified are remediated to sufficient levels and standards
3. To ensure that buildings and land can be reused for future generations
4. To ensure sites not presently permitted are regulated appropriately if waste is produced
5. To assist operators in the above

4.Results

Reports that may be needed

Initial report/plan
Remediation strategy
Sampling/surveying strategy
Interim report depending on surveys and monitoring
Update of strategy including BAT options (best practical environmental options, best practical means)
Implementation of BAT, written SOPs
Final report
Appropriate recording of any remaining issues for the future

Old laboratories




Thorium gas mantle works part demolished

Radium luminised scrap


Large scale remediation


5. Discussion and conclusion

Sealed sources - You can prove disposal by records of consignments to authorised persons.
Open sources/waste - Prove there is no legacy with sufficient reports. Record material remaining and areas not looked into. Do not forget other regulations that may apply.

Recent good example	Recent bad example
Agreed aims and end points	A landfill contacted us asking if waste from a site was exempt
Suitable BAT assessment	We had no previous site information
Suitable procedures	There did not seem to be much emphasis on EPR regulations
Suitable people involved	The records of waste were unclear
	Waste excavated could potentially have been above exempt levels
	There was no store for excavated waste on site & no permit in place

Conclusion

Surrender of permits and remediation of sites is achievable. Plan carefully and involve the right people at the right time. Do not forget any other hazards.

Thanks to Aurora Health Physics for some of the photographs shown.