

Environment Agency: Radiopharmacy design

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Overview

- ➔ Environment Agency's role
- ➔ EA requirements for radiopharmacy construction
- ➔ Security
- ➔ Arrangements for delivery/collection of spent generators

Environment Agency

- ➔ Regulate:
 - ➔ keeping & use of radioactive material
 - ➔ accumulation & disposal of radioactive waste
- ➔ Enforce the Environmental Permitting Regulations which:
 - ➔ Protect the public and the environment
 - ➔ Keep waste production as low as is reasonably practical (using Best Available Techniques)
 - ➔ Ensure no waste is created that does not have a disposal route
 - ➔ Keep sources secure
- ➔ Pre-permitting system

Radioactive Substances Act

Scottish Environmental Protection Agency

Radioactive Substances Act

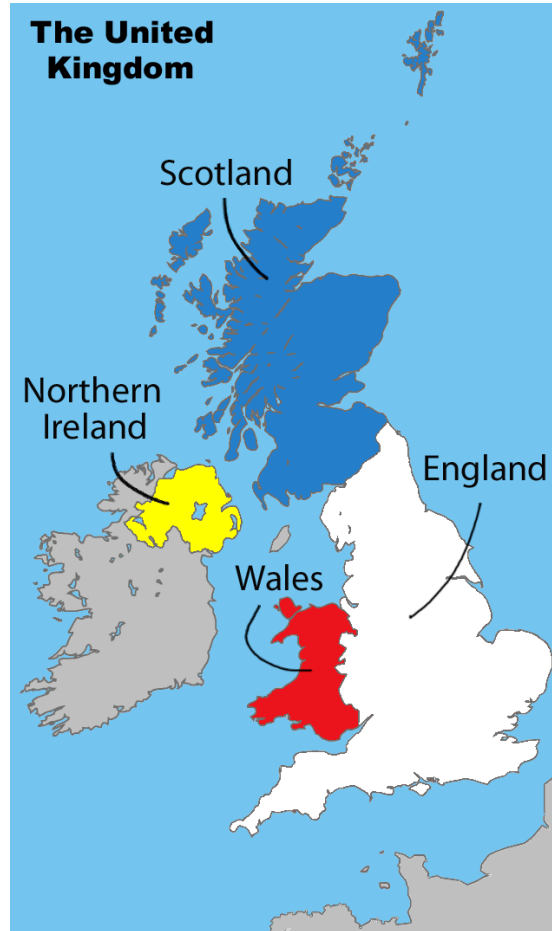
Northern Ireland Environment Agency

Environmental Permitting Regulations

Natural Resources Wales

Environmental Permitting Regulations

Environment Agency



Permits

- ➔ Sealed sources (restricted)
- ➔ Open sources (publically available)
- ➔ Permits issued to organisation, apply to site
- ➔ Open sources permits
 - ➔ Maximum holdings of radioactive materials
 - ➔ Limit disposals to the environment via sewer/air etc
 - ➔ Limits for waste that can be accumulated
- ➔ Impose conditions on use

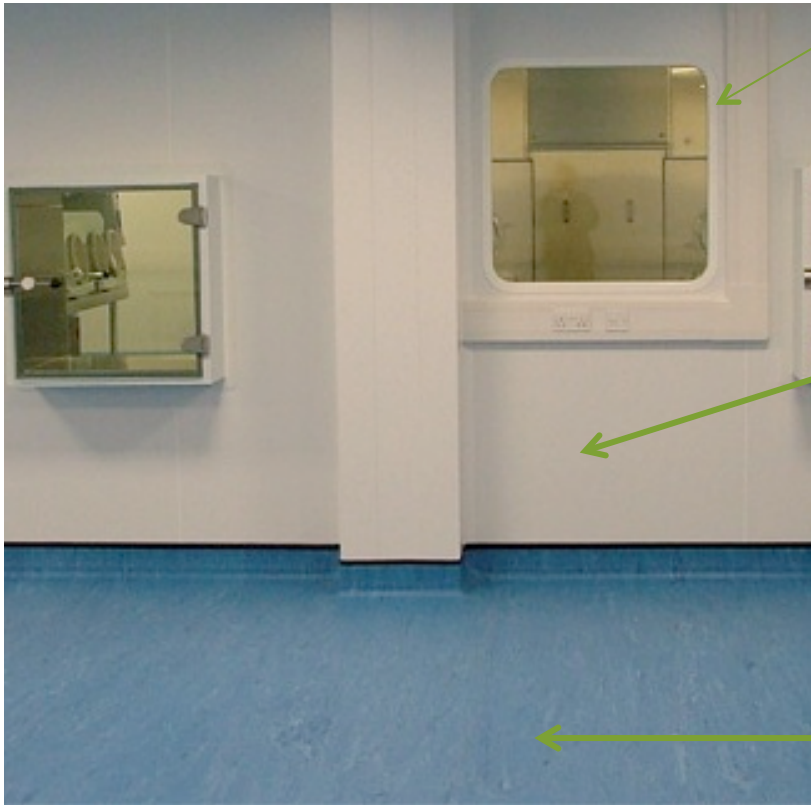
Open source permits require:

“The operator shall use the best available techniques: to ensure that all relevant parts of the premises are constructed, maintained and used in such a manner that:

- (i) they do not readily become contaminated; and*
- (ii) any contamination which does occur can be easily removed”*

Construction

Preferably
steel/vinyl



Walls (& Ceilings)

Smooth, gloss or high quality vinyl emulsion

Floors:

- Thick, good quality, smooth Vinyl
- Coved to walls
- Welded joints

Benches

- ➔ Smooth, hard, non-absorbent
- ➔ Upstand to rear
- ➔ Gaps and joints sealed
- ➔ Curved front edge?
- ➔ Sockets/electrical trunking away from work
- ➔ Use of drip trays to contain spills
- ➔ Delineated areas for working with RAM

Fume cupboards/safety cabinets

- ➔ Used where risk of airborne contamination
- ➔ Surfaces – smooth, hard, resistant to contamination

Sinks for disposal of radioactive liquids

- ➔ Stainless steel
- ➔ Splash back
- ➔ Small sink trap
- ➔ Drains – labelled, short run to main drain.



Contamination monitoring

- ➔ Suitable instruments
- ➔ Action levels, record response



Gaseous emissions

- ➔ BAT to minimise releases
- ➔ Abated?
- ➔ Hot cells in PET radio pharmacy
 - ➔ Abatement via filters or delay lines/tanks
 - ➔ Calibrated stack monitor to show compliance with permitted limits

Source security

➔ Large sealed sources specific - security requirements

➔ Otherwise

“The operator shall use the best available techniques.. To prevent...

- the loss of any radioactive material or radioactive waste*
- unauthorised access to any radioactive material or radioactive waste”*

Open Source Security

- ➔ secure doors and windows
- ➔ safes, lockable fridges/freezers
- ➔ Alarms, swipes access, CCTV etc.

Deliveries to Nuclear Medicine

- ➔ Vulnerable – delivery and collection (of spent generators), especially outside office hours
- ➔ Need to consider store for out of hours deliveries that does not give access to the rest of department
- ➔ Useful guidance in NMC

Lawson et al, "Delivery and Collection of Radioactive Packages to and from UK Hospital NM Departments" Nuclear Medicine Communications. Vol 25 pp1161-1167 Dec 2004.

Waste management

- ➔ Security condition also applies to waste.
- ➔ Systematic approach
- ➔ Bins –
 - ➔ Provide suitable containment
 - ➔ Labelled
 - ➔ Lidded
 - ➔ Foot operated
- ➔ Waste store

ANY QUESTIONS?