

## Instituting Two Physical Barriers for the Security of High Dose Rate Brachytherapy Devices

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### Purpose

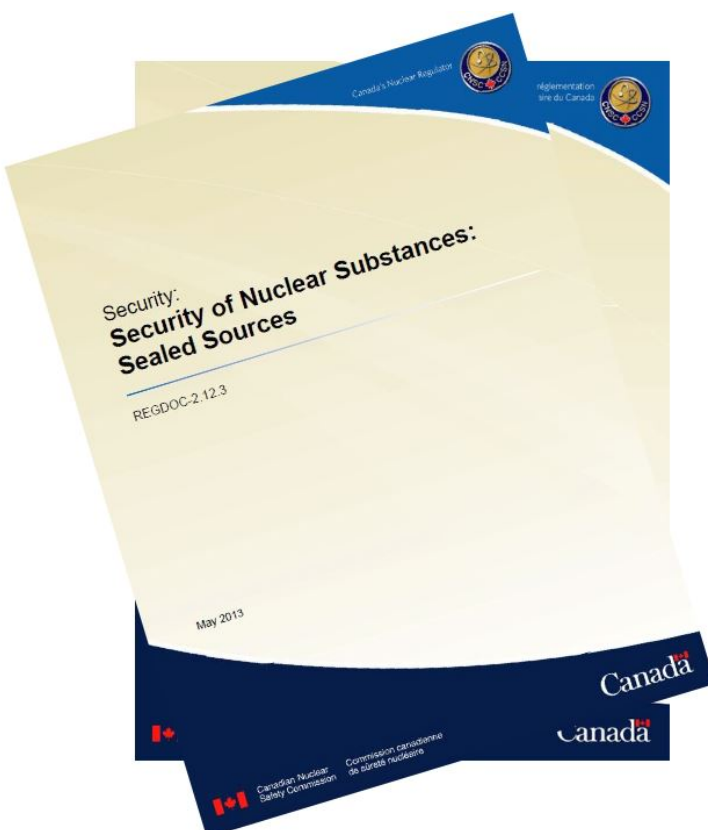
This fact sheet provides owners of high dose rate (HDR) brachytherapy devices with additional guidance on implementing the requirement of REGDOC-2.12.3, *Security of Nuclear Substances: Sealed Sources*, with respect to physical barriers. Specifically, guidance is included to assist licensees in evaluating the effectiveness of their physical security measures to ensure they provide adequate delay.




### Requirement

The radioactive sources within HDR devices are designated as Category III sources by the CNSC. Due to this categorization, an HDR unit necessitates a minimum of two physical barriers for its security. To establish these physical barriers, their resistance capabilities must be considered in association with the other facets of your security system. In other words, a “performance-based” analysis of the **whole** security system must be conducted to evaluate the minimum delay that the physical barriers must provide.

**For additional  
information, contact  
your project officer**

To assist in this analysis, the table on the reverse side provides some information about the resistance capability of the elements employed for barriers. These elements are usually implemented with each other. It is **essential** to understand that this information is provided as **guidance** only. Again, any physical barrier employed must be considered with all aspects of the security system to achieve the goal of providing a sufficient delay for response personnel to intervene.



Estimated time to defeat component using a handheld tool		Short	Medium	Long
Anchor	Anchor type		Bolted-down	Concrete-in
	Shackle/bolt material	Brass, steel, stainless steel	Hardened steel	Boron alloy, carbide
	Shackle diameter	< 12 mm	12–15 mm	> 16 mm
	Eye bolt	Screwed-in		Semi-embedded (concrete-in)
Cable	Cable material	Braided steel fibre	Braided steel fibre, hardened steel	Braided steel fibre, hardened steel
	Cable diameter	< 20 mm	20–30 mm	> 30 mm
Chain (if used)	Chain material	Steel, stainless steel	Hardened steel	Boron alloy, shrouded
	Link diameter	< 10mm	10–30 mm	> 30mm
	Link shape		Round or square, or “noose” chain	Hexagonal
	Hardening	None	Case hardening	Core hardening
<b>Note: The fixation point on the unit to which the physical barrier (e.g., chain) is attached must not be easily removable from the unit using handheld tools.</b>				
Lock	Lock rating			UL 437** Lock
	Casing material	Aluminum	Brass, steel	Hardened steel
	Shackle material	Brass, steel, stainless steel	Hardened steel	Boron alloy, carbide, shackle shrouded
	Shackle diameter	3/16"–1/4"	> 1/4"	> 1/2"
	Shackle locking	Single lever	Dual lever	Dual ball bearing
	Key	Standard 4-pin	5- or 6-pin, dual-sided pins	>7-pin, dimpled pin, rotating disks
	Examples			
Containment (if used)	Container type	Open side/surface such that unit is not fully contained	Wire mesh cage, metal bars, (unit cannot be removed through openings)	Robust enclosure (all sides closed)
	Cage fabric	> 10 gauge meshing	< 10 gauge meshing, ≤2.5 cm metal bar	Solid, not solely gypsum
	Mobility	Very mobile (e.g., wheels)	Secured to wall or floor	Bolted-down or concrete-in

**For more information:**

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