









Technical properties determine reuse options						
Portland cements & concretes	Alkaline activated cements & concretes	Ceramics				
Coal fly ash / bottom ash	Coal fly ash	Coal fly ash				
Slags from iron and steel production	Steel melting slag	Steel slag				
Copper slag	Nonferrous slag	Zircon and zirconia				
Red mud	Red mud	Aluminium-rich wastes				
Phosphogypsum	Blast furnace Slag	Refractories				

C. Nuccetelli et al, New perspectives and issues arising from the introduction of (NORM) residues in building materials: A critical assessment on the radiological Behaviour, Construction and building materials 82 (2015), 323-331











 Optimizing measurement protocols Efficiency calibration using certified reference materials of natural origin Validation of efficiency calibration: 														
								Reference material	Matrix	Radionuclide	Certified activity (Bq/kg)	Measured activity (Bq/kg)	Relative bias (%)	Within 1σ agreement
								IAEA-434	Phosphogypsum	²²⁶ Ra ^a	780 ± 62	747 ± 45	-4.23	Yes
IAEA-448	Soil from oil field	²²⁶ Ra ^a	$19,050 \pm 260$	$18,376 \pm 1060$	-3.54	Yes								
		²⁰⁸ Tl ^b	555 ± 26	521 ± 32	-6.13	Yes								
		²¹² Pb ^b	1623 ± 69	1578 ± 97	-2.77	Yes								
		²²⁸ Ac ^b	1166 ± 55	1020 ± 65	-12.52	No								
		⁴⁰ K ^b	234 ± 12	244 ± 32	4.27	Yes								
^a Certified value														
^b Informative values														
G. Xhixha et al, radioanalytical a	Calibration of HPG	Ge detectors us stry, 307 (2016	sing certified refe) 1507-1517	rence materials of	natural origin, jou	rnal of								











