

CERTIFICATE OF ACCREDITATION

In terms of section 22(2) (b) of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act 19 of 2006), read with sections 23(1), (2) and (3) of the said Act, I hereby certify that:-

NATIONAL METROLOGY INSTITUTE OF SOUTH AFRICA RADIOACTIVITY STANDARDS LABORATORY

Accreditation Number: **1610**

is a South African National Accreditation System accredited Calibration Laboratory
provided that all SANAS conditions and requirements are complied with

This certificate is valid as per the scope as stated in the accompanying scope of accreditation
Annexure "A", bearing the above accreditation number for

RADIOACTIVITY METROLOGY

The facility is accredited in accordance with the recognised International Standard

ISO/IEC 17025:2017

The accreditation demonstrates technical competency for a defined scope and the operation of a
laboratory quality management system

While this certificate remains valid, the Accredited Facility named above is authorised to use the
relevant SANAS accreditation symbol to issue facility reports and/or certificates

Mr M Phaloane
Acting Chief Executive Officer

Effective Date: 07 December 2020
Certificate Expires: 08 August 2025

ANNEXURE A

SCHEDULE OF ACCREDITATION**RADIOACTIVITY METROLOGY**

Accreditation Number: 1610

Permanent Address of Laboratory: National Metrology Institute of SA Radioactivity Standards Laboratory 15 Lower Hope Road Rosebank Cape Town 7700		Technical Signatories: Mr M van Staden (Items 1 to 4) Ms J Lubbe (items 3, 4 & 5) Dr M van Rooy			
Postal Address: National Metrology Institute of SA Radioactivity Standards Laboratory 15 Lower Hope Road Rosebank Cape Town 7700		Nominated Representative: Ms L Ntatamala			
Tel: (021) 685-7776/2065 Fax: (021) 686-2759 E-mail: Intatamala@nmisa.org		Issue No.: 15 Date of Issue: 07 December 2020 Expiry Date: 08 August 2025			
ITEM	MEASURED QUANTITY OR TYPE OF GAUGE OR INSTRUMENT	NUCLIDE	RANGE OF MEASURED QUANTITY	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	METHOD / PROCEDURE
1	Activity per unit mass, Single radionuclide solution	Am-241 Ba-133 Cd-109 Ce-139 Co-57 Co-60 Cs-134 Cs-137 F-18 Fe-59 Ga-67 Ho-166m I-131 Ir-192 Lu-177 Mn-54 Na-22 Se-75	3,5*10 ⁴ to 4,0*10 ⁷ Bq/g 4,3*10 ⁴ to 4,0*10 ⁷ Bq/g 3,9*10 ⁴ to 4,0*10 ⁷ Bq/g 9,0*10 ⁴ to 2,0*10 ⁸ Bq/g 3,9*10 ⁵ to 5,0*10 ⁸ Bq/g 3,7*10 ⁴ to 4,0*10 ⁷ Bq/g 4,0*10 ⁴ to 4,0*10 ⁷ Bq/g 3,6*10 ⁴ to 7,2*10 ⁷ Bq/g 3,5*10 ⁴ to 5,0*10 ⁹ Bq/g 3,5*10 ⁴ to 3,0*10 ⁶ Bq/g 5,1*10 ⁴ to 5,0*10 ⁸ Bq/g 3,7*10 ⁴ to 3,0*10 ⁷ Bq/g 3,5*10 ⁴ to 1,0*10 ⁹ Bq/g 3,5*10 ⁴ to 8,0*10 ⁵ Bq/g 3,5*10 ⁴ to 5,0*10 ⁸ Bq/g 9,0*10 ⁴ to 4,0*10 ⁶ Bq/g 3,4*10 ⁵ to 8,0*10 ⁷ Bq/g 4,5*10 ⁴ to 4,0*10 ⁷ Bq/g	0,4 % 0,7 % 0,6 % 1,1 % 0,6 % 0,5 % 0,6 % 0,7 % 0,8 % 0,6 % 0,5 % 0,8 % 1,0 % 0,6 % 0,6 % 1,6 % 0,5 % 0,8 %	Calibration of a radionuclide solution by Liquid Scintillation Coincidence Counting (4πβ - γ direct measurement) & Weighing

Original Date of Accreditation: May 2004

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The CMC, expressed as an expanded uncertainty of measurement, is stated as the standard uncertainty of measurement multiplied by a coverage factor $k = 2$, corresponding to a confidence level of approximately 95%

Accreditation Manager

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ITEM	MEASURED QUANTITY OR TYPE OF GAUGE OR INSTRUMENT	NUCLIDE	RANGE OF MEASURED QUANTITY	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	METHOD / PROCEDURE
1 (Cont.)	(Continued) Activity per unit mass, Single radionuclide solution	Tc-99m Tl-201 Tl-204 Zn-65	$1,9 \cdot 10^5$ to $5,0 \cdot 10^8$ Bq/g $4,4 \cdot 10^4$ to $4,0 \cdot 10^7$ Bq/g $5,6 \cdot 10^4$ to $4,0 \cdot 10^5$ Bq/g $6,1 \cdot 10^4$ to $4,0 \cdot 10^5$ Bq/g	2,8 % 1,1 % 1,2 % 1,5 %	Calibration of a radionuclide solution by Liquid Scintillation Coincidence Counting ($4\pi\beta$ - γ direct measurement) & Weighing
2	Activity per unit mass Single radionuclide solution	C-14 Fe-55 H-3 Ni- 63 P- 33 Pu- 241 S- 35 Sr - 89 Tc - 99 Tl -204 Y - 90	$1,2 \cdot 10^4$ to $5,1 \cdot 10^5$ Bq/g $5,3 \cdot 10^4$ to $5,7 \cdot 10^5$ Bq/g $5,0 \cdot 10^4$ to $4,0 \cdot 10^7$ Bq/g $1,7 \cdot 10^4$ to $1,6 \cdot 10^6$ Bq/g $1,1 \cdot 10^4$ to $5,0 \cdot 10^5$ Bq/g $4,8 \cdot 10^4$ to $3,5 \cdot 10^5$ Bq/g $1,2 \cdot 10^4$ to $5,0 \cdot 10^5$ Bq/g $1,0 \cdot 10^4$ to $4,0 \cdot 10^5$ Bq/g $1,1 \cdot 10^4$ to $4,0 \cdot 10^5$ Bq/g $1,7 \cdot 10^4$ to $4,0 \cdot 10^5$ Bq/g $1,0 \cdot 10^4$ to $5,0 \cdot 10^8$ Bq/g	1,0 % 1,3 % 1,8 % 1,1 % 1,0 % 2,6 % 1,0 % 0,9 % 1,1 % 1,1 % 0,8 %	Calibration of a radionuclide solution by Liquid Scintillation Coincidence Counting (TDCR Method) & Weighing
3	Activity, Single radionuclide solution	Am-241 Ba-133 Ce-139 Co-57 Co-60 Cs-134 Cs-137 F-18 Fe-59 Ga-67 Ge-68/Ga-68 Ho-166m I-123 I-125 I-131 Ir-192 Lu-177 Mn-54 Mo-99 Na-22 Se-75 Tc-99m Y-90 Zn-65	$2,0 \cdot 10^5$ to $4,0 \cdot 10^7$ Bq $2,0 \cdot 10^5$ to $4,0 \cdot 10^7$ Bq $2,0 \cdot 10^5$ to $2,0 \cdot 10^8$ Bq $2,0 \cdot 10^5$ to $5,0 \cdot 10^8$ Bq $2,0 \cdot 10^5$ to $4,0 \cdot 10^7$ Bq $2,0 \cdot 10^5$ to $4,0 \cdot 10^7$ Bq $2,0 \cdot 10^5$ to $7,2 \cdot 10^7$ Bq $2,0 \cdot 10^5$ to $5,0 \cdot 10^9$ Bq $2,0 \cdot 10^5$ to $3,0 \cdot 10^6$ Bq $2,0 \cdot 10^5$ to $5,0 \cdot 10^8$ Bq $2,0 \cdot 10^5$ to $5,0 \cdot 10^7$ Bq $2,0 \cdot 10^5$ to $3,0 \cdot 10^7$ Bq $2,0 \cdot 10^5$ to $5,0 \cdot 10^8$ Bq $2,0 \cdot 10^5$ to $4,0 \cdot 10^7$ Bq $2,0 \cdot 10^5$ to $1,0 \cdot 10^9$ Bq $2,0 \cdot 10^5$ to $8,0 \cdot 10^5$ Bq $2,0 \cdot 10^5$ to $5,0 \cdot 10^8$ Bq $2,0 \cdot 10^5$ to $4,0 \cdot 10^6$ Bq $2,0 \cdot 10^5$ to $5,0 \cdot 10^8$ Bq $2,0 \cdot 10^5$ to $8,0 \cdot 10^7$ Bq $2,0 \cdot 10^5$ to $4,0 \cdot 10^7$ Bq $2,0 \cdot 10^5$ to $5,0 \cdot 10^8$ Bq $2,0 \cdot 10^5$ to $5,0 \cdot 10^8$ Bq $2,0 \cdot 10^5$ to $4,0 \cdot 10^5$ Bq	3,0 % 0,8 % 1,2 % 2,0 % 0,6 % 0,8 % 3,0 % 0,8 % 1,2 % 3,4 % 2,4 % 0,8 % 2,8 % 3,0 % 2,0 % 1,0 % 2,0 % 2,0 % 2,0 % 3,0 % 1,0 % 4,0 % 2,8 % 3,0 % 1,4 %	Assay of a radionuclide solution using an high pressure ionization chamber.

Original Date of Accreditation: May 2004

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Accreditation Manager

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4	Activity Single radionuclide solid	Ce-139 Co-60 Cs-137 I-131 Na-22	1,0*10 ⁵ to 2,0*10 ⁶ Bq 1,0*10 ⁵ to 2,0*10 ⁶ Bq 1,0*10 ⁵ to 2,0*10 ⁶ Bq 2,0*10 ⁵ to 5,0*10 ⁸ Bq 1,0*10 ⁵ to 2,0*10 ⁶ Bq	4,0% 4,0% 4,0% 2,0% 4,0%	Assay of a single radionuclide solid using a high pressure well type ionization chamber
5	Activity per unit of mass, gamma-emitting nuclides in liquids and solids.	Various	0,23 to 7.9*10 ⁴ Bq/kg	12,0 to 52%	Analysis of gamma-emitting radionuclides in solids and liquids (using gamma-ray spectrometry with an HPGe detector), LABSOCS modelling software & weighing

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ISSUED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM

Accreditation Manager