

NRPI radon chamber



NRPI thoron/radon chamber



I. Radon chamber

Details of calibration facility:

Typical radon concentration:	200 - 8000 Bq/m ³
Volume:	45 m ³ , type Walk in, walls similar to dwellings
Continuously monitored and controlled parameters:	radon gas, EEC, equilibrium factor, fp, temperature, relative humidity air exchange rate aerosol concentration and size distribution (5– 1100) nm
Available for monitoring:	GRIMM (SMPS + C) plus aerosol generator (carnauba wax)
Uncertainties (95 CI):	radon gas < 10 %, EEC < 20 %.

Typical adjustable and stable parameters in NRPI atmosphere:

Quantity	Typical used values
Temperature	(8 – 45) °C
Rel. humidity	(20 - 95) %
Mean aerosol aerodynamic diameter	(100 – 200) nm
Air exchange rate	(0,1 - 2) h ⁻¹
Equilibrium factor	(1 – 90) %
f _p	(1- 60) %

II. Thoron/radon chamber

Details of calibration facility:

Thoron concentration:	100 – 100 000 Bq/m ³
Radon concentration:	5 Bq/m ³ – 10 MBq/m ³
Ratio (K) of radon/thoron:	arbitrary ratios in wide range: $K < 1$ or $K > 1$
Volume:	150 dm ³ , stainless steel vessel
Continuously monitored and stable parameters:	radon gas, thoron gas, relative humidity, room temperature
Uncertainties (95 CI):	radon gas < 10 % , thoron gas < 15%.

Typical adjustable and stable parameters in NRPI atmosphere

Quantity	Typical used values
Temperature	(room temperature)
Rel. humidity	(5 – 60) %
f_p	> 50%

All of the NRPI reference instruments are independently compared with a primary instruments of the renowned Labs. as the PTB Braunschweig (D), BfS Berlin (D) and Czech Authorized Metrological Centre Kamenna.

Description of the QA Programme for radon gas and short lived radon progenies is published as doi:10.1093/rpd/ncn113 in the Radiation Protection Dosimetry, Vol. 130, No. 1, pp. 43-47, 2008.

REFERENCES :

2015

2014 ICHLNRRRA Intercomparison of Radon/Thoron Gas and Radon Short-Lived Decay Products Measuring Instruments in the NRPI Prague, doi:10.1093/rpd/ncv311

2014

International Intercomparison of Measuring Instruments for Radon/Thoron Gas and Radon Short-Lived Daughter Products in the NRPI Prague, doi:10.1093/rpd/ncu079

2011

International Intercomparison of Measuring Instruments for Radon Gas and Radon Short-Lived Daughter Products in the NRPI Prague, doi:10.1093/rpd/ncu079