

Controlatom Experiences in past Eurados Intercomparisons

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IC2014ph Participants Meeting - IM2015

Controlatom

Belgian law on radiological protection 1963

Controlatom founded in 1965 as a non profit organisation

Primary task :

Regulatory control
Health Physics

Health Physics

Protection of the worker/public:

Proposition of protective measures, compliance with legislation, performing measurements, shielding studies, approval of procedures...



Dosimetry - 1970

As a means of evaluating the optimisation measures

Evaluating radiological protection of the workers

Compliance with legal limits

→ Dosimetry

Medical Physics – 90's

Radiological protection
of the patient

Equipment compliance

Patient dosimetry



The dosimetry service today

Processing of 300,000 dosemeters per year (Medical/Industrial/NPP)

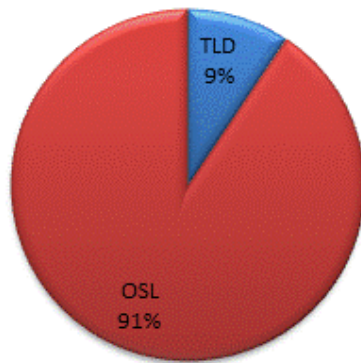
Irradiation facility (Cs-Quality)

Accredited ISO17025

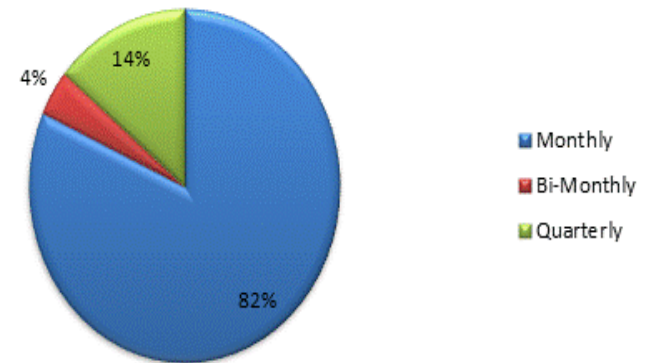


Dosemeter distribution

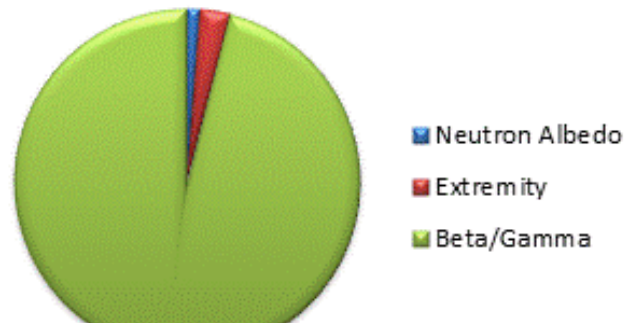
Dosemeter Material



Dosemeter Exchange Periods



Dosemeter Types

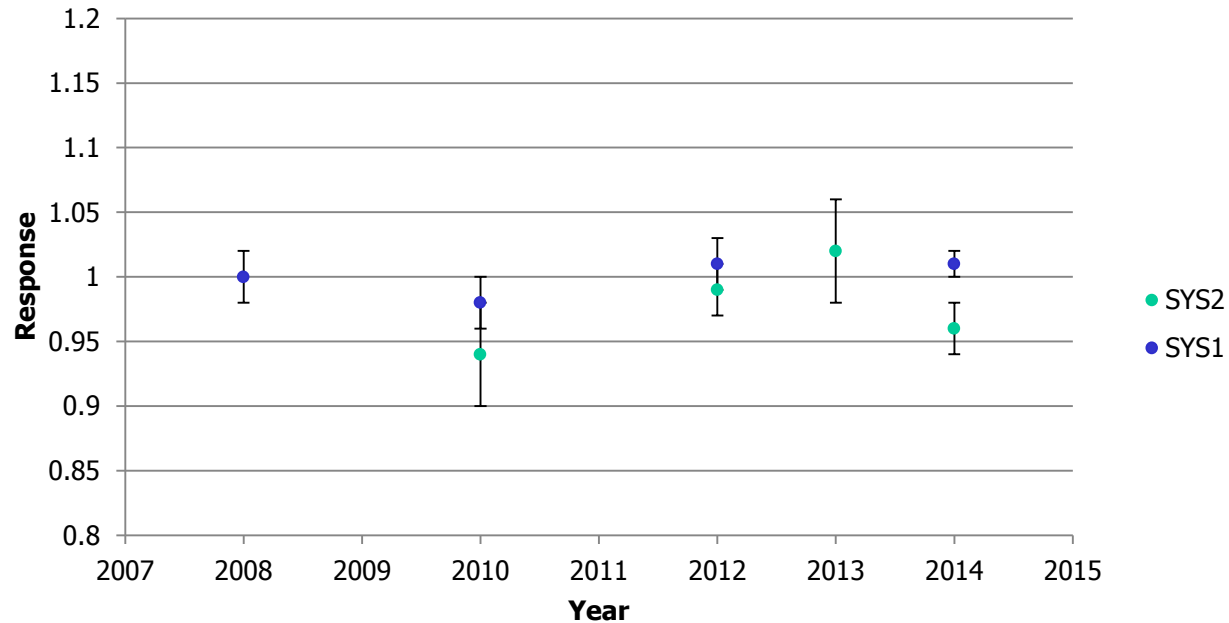


Intercomparison participation

- Photons (2 systems):
 - 2008
 - 2010
 - 2012
 - 2013 (Belgian, 1 system)
 - 2014
- Extremity : 2009
- Neutron : 2012 (2010 PTB)
- Eye Lens : 2014

Calibration factors

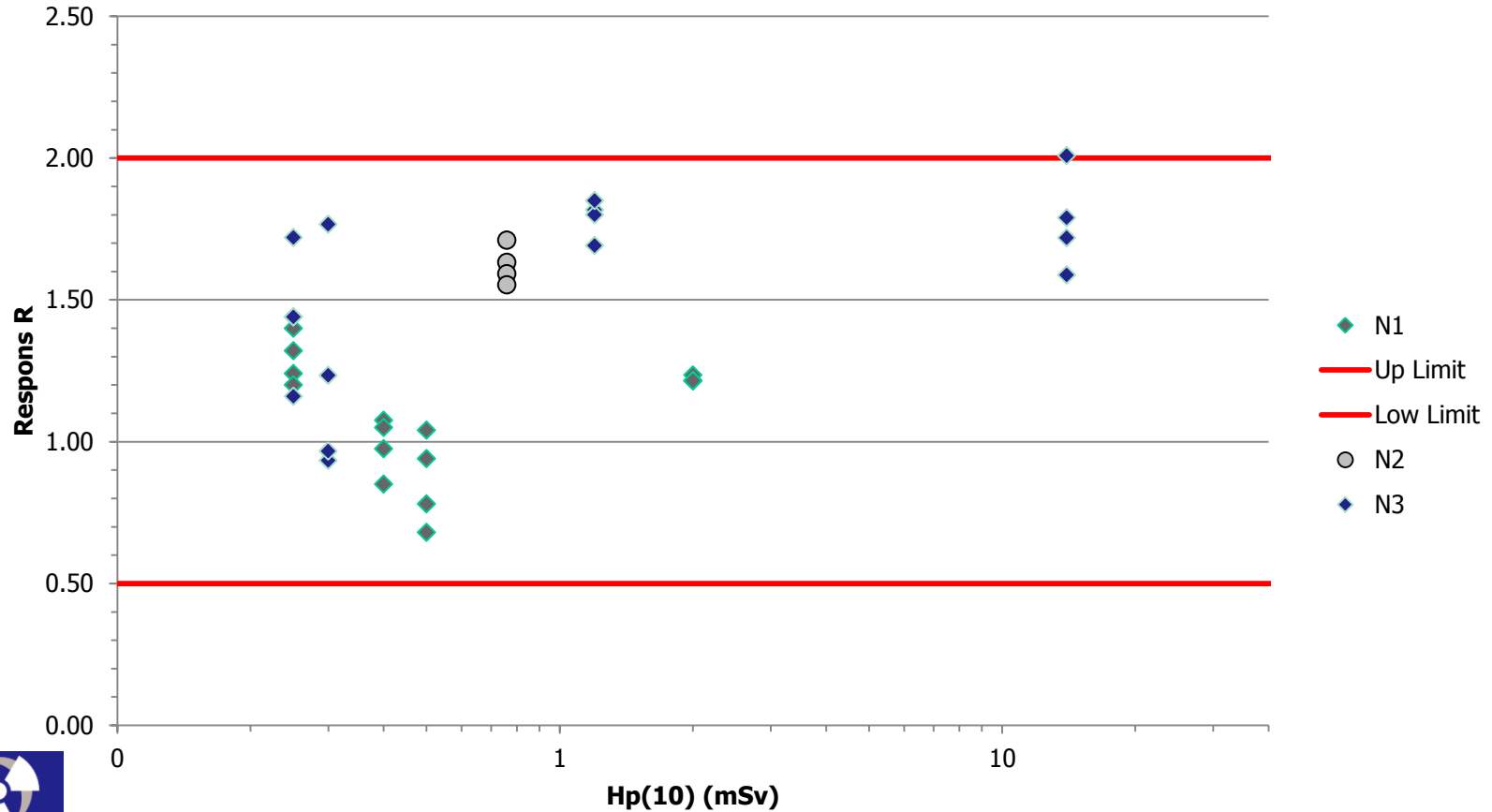
**Evolution of Response Beta/Gamma
(Cs-137 Beam Quality)**



Allows to check for main calibration factor

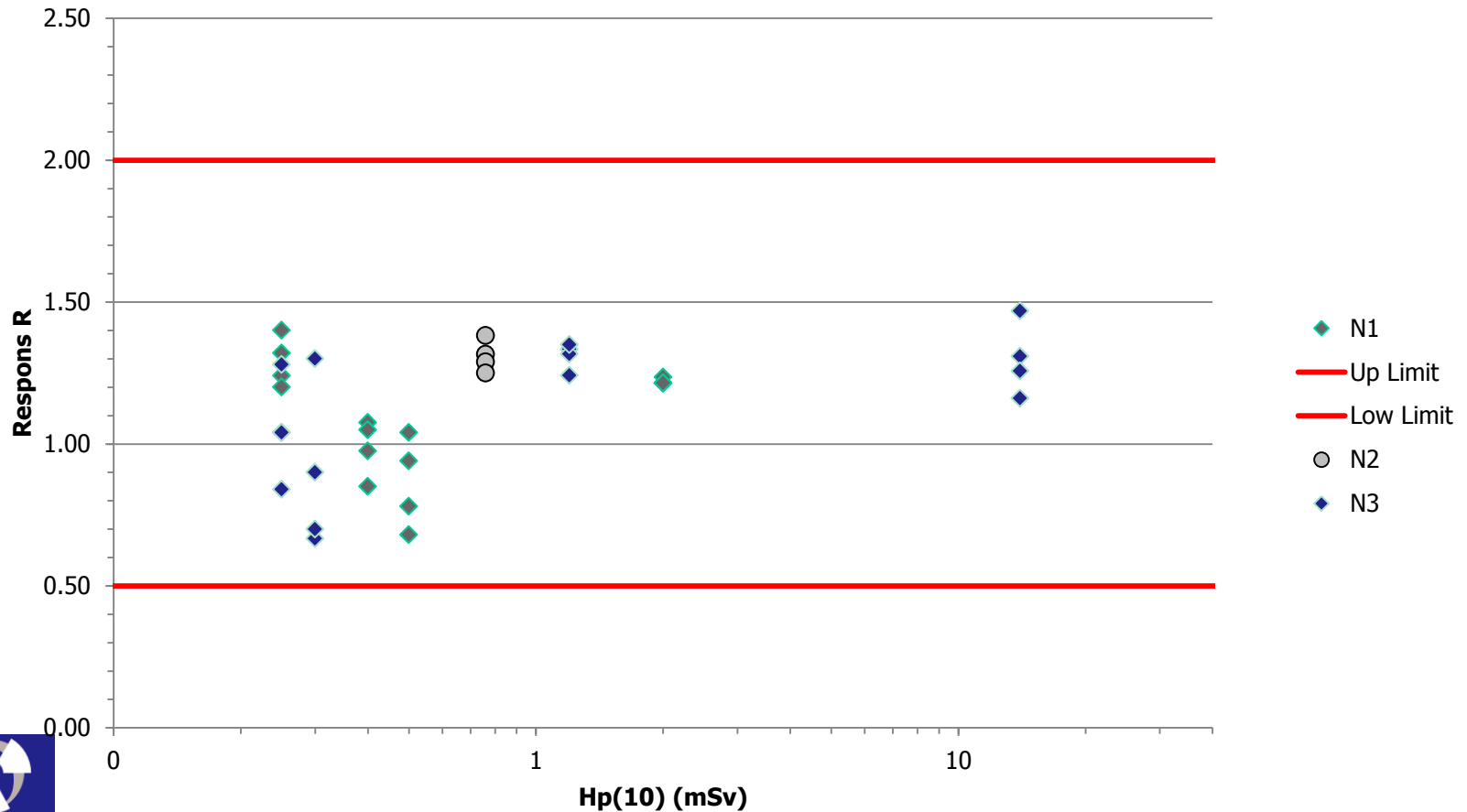
Calibration factors

PTB IC2010 Hp(10) (Neutron)



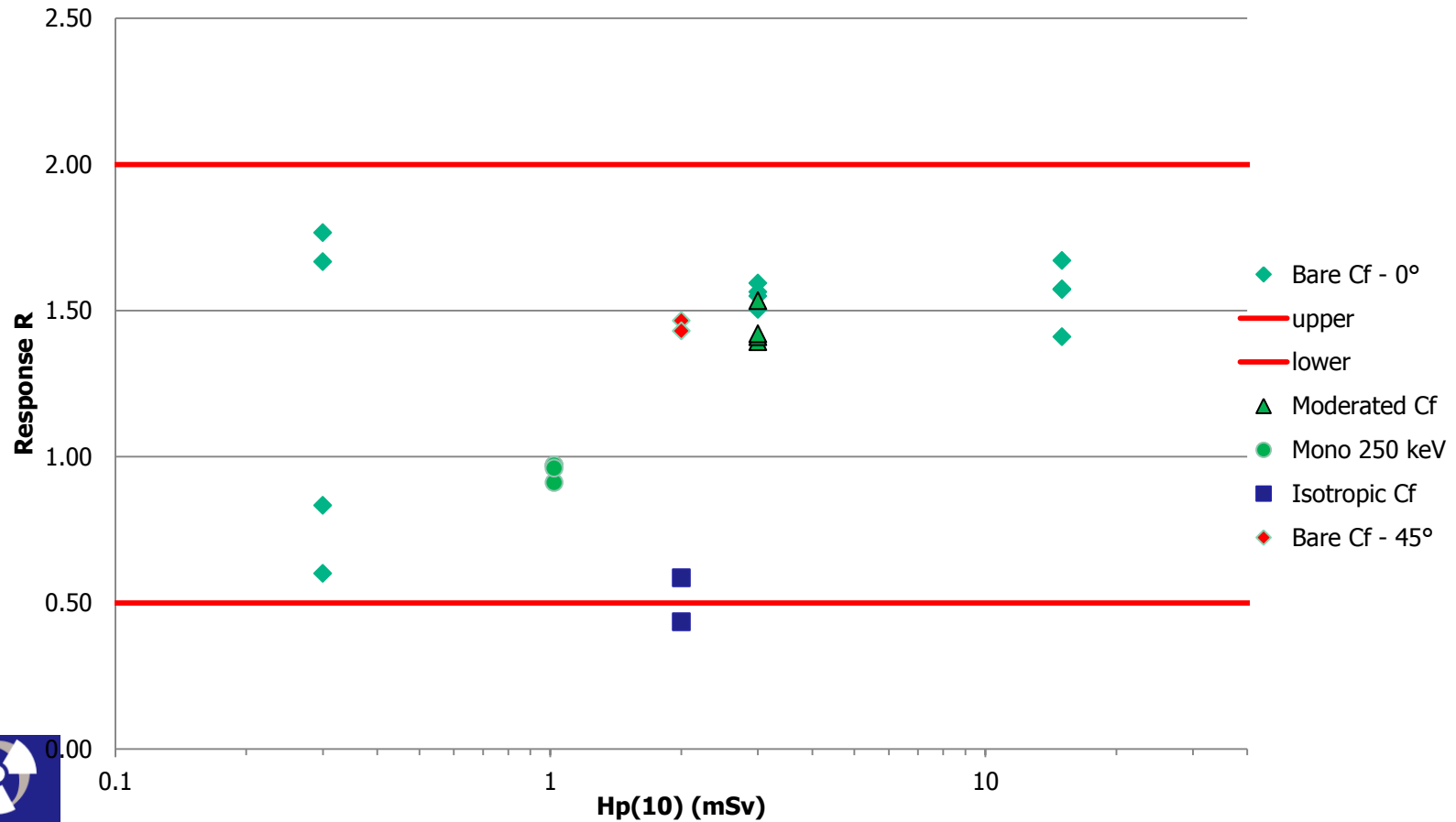
Calibration factors

PTB IC2010 Hp(10) (Neutron)
(with adapted cal. factor V for spectra N2 and N3)



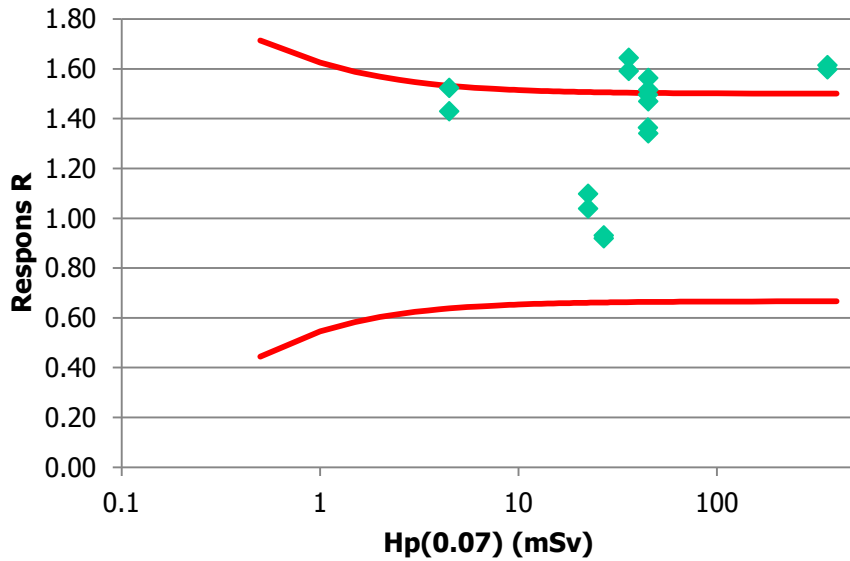
Calibration factors

Eurados IC2012n Hp(10) (Neutron)



Calibration factors

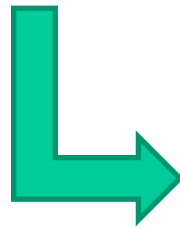
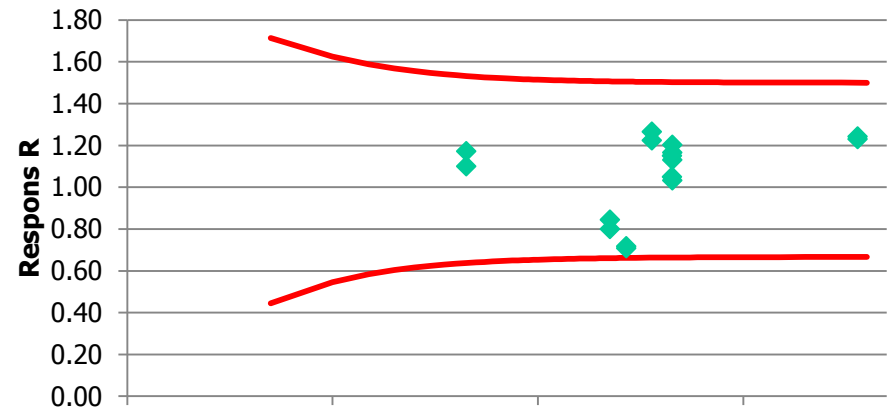
IC2009 (EXT)



Instead of Cs-137 reference field which is not adequate for Hp(0.07)

Reference field N100

IC2009 (EXT)



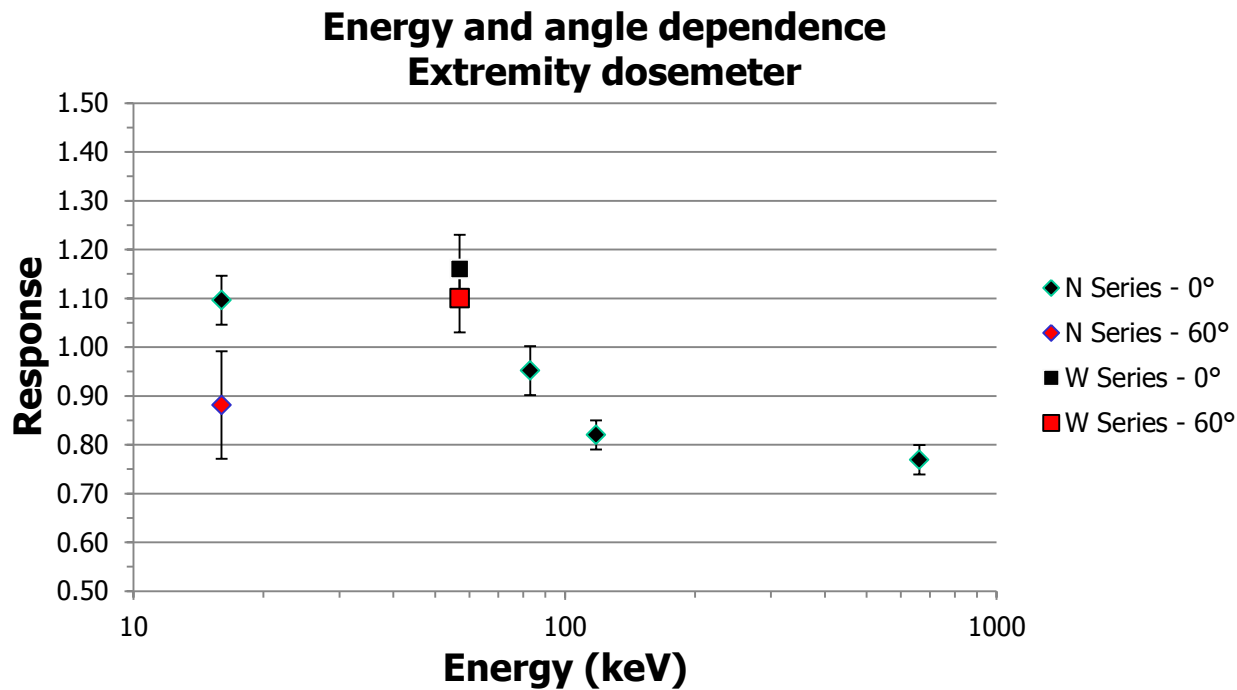
Traceability

- For photon : via irradiation facility (transfert ionisation chamber)
- For extremity and neutron : Eurados intercomparisons

“Type testing”

- For licensing/accreditation purposes :
compliance with IEC62387
 - Narrow series of ISO 4037
- Problem for dosimeters designed/type tested before IEC standard
 - Mixed fields (ANSI standard)
 - Wide series
 -

“Type testing”



Only one narrow series from Eurados Intercomparison !

Conclusion

- Necessary for (ISO 17025) accreditation
 - Not always organised on local scale
- Provide information on proper calibration/traceability
 - Exposures by ISO 17025 accredited labs
- Provide information on dosimeters characteristics (linearity, spectral response,...)

Conclusion

- Include Cs-137 beam quality as reference beam quality
 - Allows dosimetry service to normalise to own reference (mostly Cs-137)
- Include narrow series from ISO 4037
 - Allows for 'Type testing'
- Interchange photon whole body/Hp(10) dosimeters with other dosimeters/quantities
 - neutron, eye lens, extremity, beta