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Neuherberg, September 2021

EURADOS Intercomparison 2019 for Extremity and Eye Lens Dosemeters -

Summary of Procedures, Results and Conclusions

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Contents

Abstract

EURADOS Working Group 2 has developed a system for a self-sustained programme of regular dosemeter intercomparisons (ICs), (Figel, M. Report to Council, WG02-SG2, 2007). ICs for whole body dosemeters were carried out in 2008, 2010, 2012, 2014, 2016 and 2018. In addition, four ICs with different scopes were carried out, two for extremity dosemeters in photon and beta fields ($IC2009_{ext}$ and $IC2015_{ext}$) and two for whole-body dosemeters in neutron fields ($IC2012_{n}$ and $IC2017_{n}$). This IC, ie. $IC2019_{exteye}$, for extremity and eye lens dosemeters (effectively two separate ICs), has built on the success of these previous ICs with a total of 113 participating systems (68 extremity and 45 eye lens) from 60 institutes with participants from 26 countries around the world.

The high number of participants with eye lens dosemeters demonstrates the recent increase in demand for these services which has arisen from the implementation in 2018 by EU Member States of the 20 mSv eye lens dose limit introduced by the European Council (European Council Directive 2013/59/EURATOM, 2014).

The systems tested during this exercise included 97 TLD, 12 OSL and 4 dosemeter systems based on other techniques (Other). A total of 3616 dosemeters were handled by the coordinator of which 2314 dosemeters were irradiated. Photon irradiations were carried out by GAEC and the beta irradiations were carried out by IRSN.

Out of the total of 113 systems, 57 reported results for photons only and 56 reported both photon and beta. In general, the participants showed a very satisfactory performance with the medians of all $H_p(0.07)$ and $H_p(3)$ response values very close to unity.

From the statistical overviews of the results, the reports provided by the irradiation laboratories and the remarks received from the participants, it can be concluded that the intercomparison exercise was successful and that there were no significant issues encountered by the intercomparison organization or the irradiation laboratories during the execution of the exercise.

The Participants Meeting had been scheduled to be held at IM2020 (23 April) in Budapest but unfortunately both of these events had to be cancelled as a result of Covid-19.

These IC results can assist the participants to show compliance with their quality management system, compare their results with those from other participants and develop action plans for improvement of their systems. The high number of participants confirms that there is strong demand for international IC exercises in Europe, and that these are of significant operational value for Individual Monitoring Services (IMS).

1 Introduction

EURADOS working groups on Harmonisation of Individual Monitoring in Europe (1997-2000 (Bartlett, et al., 2000) (Bartlett, et al., 2001), 2001-2004 (Van Dijk, et al., 2004)) have shown that intercomparison exercises (ICs) are fundamental for harmonisation of individual monitoring services (IMS). Consequently, these EURADOS working groups recommended periodic performance tests or IC exercises within the European Union (EU) to assist this objective. It was believed that ICs would stimulate IMS to improve the quality of their results, provide information on IMS quality throughout EU and assist harmonisation of IMS quality control standards. Further support was provided by the response to questionnaires sent to IMS in the EU and non-EU countries which showed very strong interest in participating in the proposed programme of periodic ICs.

Participation in regular ICs is now specifically recommended in the European Commission's *Technical Recommendations for Monitoring Individuals Occupationally Exposed to External Radiation* (European Commission, 2009). Participation is also being considered as an essential criterion for IMS approval by a number of national authorities. At the same time, a growing number of IMS are either working towards, or have already achieved, formal EN ISO/IEC 17025 (ISO 17025, 2017) accreditation which specifically requires participation in regular inter laboratory comparisons.

EURADOS WG2 has now successfully carried out five ICs for whole body dosemeters (IC2008, IC2010, IC2012, IC2014, IC2018) (Grimbergen, et al., 2012) (McWhan, et al., 2015) (McWhan, et al., 2015) (Stadtmann, et al., 2018) and three for extremity dosemeters in photon and beta fields (IC2009, $IC2015_{ext,}$ $IC2019_{exteye}$) – see (Grimbergen, et al., 2013). All of these ICs have been performed without any external funding with all costs being covered by the participants' fees. Details are summarised in the Appendix A and in further publications in scientific journals (Grimbergen, et al., 2016) (Romero, et al., 2016) (Figel, et al., 2016) (Stadtmann, et al., 2017).

$IC2019_{exteye}$ for extremity and eye lens dosemeters (effectively two separate ICs) has built on the success of these previous ICs and included eye lens dosemeters in response to the recent increase in demand for these services which has arisen from the implementation in 2018 by EU Member States of the 20 mSv eye lens dose limit introduced by the European Council (European Council Directive 2013/59/EURATOM, 2014).

This summary report provides an overview of the set-up and the results for $IC2019_{exteye}$.

Please note: *The tables and figures are presented as accurately as possible. However, there may appear to be a few inconsistencies in some of the data e.g. total number of dosemeters. This is a consequence of different data samples used for individual table and figures, e.g. where there have been wrongly irradiated dosemeters, missing reported numerical dose values etc.*

2 Outline of the EURADOS IC2019exteye

2.1 Organization Group

Andrew McWhan/Wioletta Dobrzynska	Cavendish Nuclear Limited, UK (Coordinating Lab)
Hannes Stadtmann	Seibersdorf Labor GmbH, AT
Markus Figel	Helmholtz-Zentrum Muenchen, DE
Tom Grimbergen	Mirion Dosimetry Services, NL
Ana M. Romero	Ciemat, ES
Isabelle Clairand	IRSN, Institut de Radioprotection et de Sûreté Nucléaire, FR

Coordinating Laboratory:
Andrew McWhan & Wioletta Dobrzynska
Cavendish Nuclear Limited, Berkeley Approved Dosimetry Service
Building A11, Gloucestershire Science and Technology Park
Berkeley, Gloucestershire, GL13 9FB, UK

2.2 Scope

The scope was for:
i) Extremity dosemeters designed to estimate $H_p(0.07)$. The dosemeters could be of type ring, stall or wrist, for wearing on fingers, wrist or ankle and are used routinely in individual monitoring of exposed workers.
ii) Eye lens dosemeters designed to estimate $H_p(3)$ which are worn on the head (not on the chest).
iii) Extremity and eye lens dosemeters designed to measure either photons and betas (indicated in this report by PhB) or photons only (indicated in this report by Ph).

Irradiations were carried out in two accredited European irradiation facilities (GAEC and IRSN) in terms $H_p(0.07)$ and $H_p(3)$ in the following ranges:

- Photon energy: 16 to 662 keV (carried out by GAEC)
- Beta mean energy 250 to 1000 keV (carried out by IRSN)
- Dose: 0.5 mSv to 1 Sv
- Angle of incidence range: ± 60°

32 dosemeters were required from each participant. 22 extremity and 18 eye dosemeters were irradiated with the remaining dosemeters available for use as transit and/or spares.

2.3 Coordination

Cavendish Nuclear Limited (Berkeley Approved Dosimetry Service) acted as the coordinating institute. The task of the coordinator is to receive, forward for irradiation and return all dosemeters back to the participants. The coordinator also carries out all communication between the participants, the irradiation laboratories and the OG. This includes the dose values reported by the participants and the irradiation laboratory. The on-line platform (OLP) employed in the previous IC was modified to facilitate handling both extremity and eye dosemeters. The entire process of

registration, communication and data exchange was managed by the OLP. The participants were also kept up to date with the current status of their documents, dosemeters etc. via the OLP.

2.4 Set-up

IC2019 set-up followed the same pattern as all previous EURADOS ICs.

All dosemeters were forwarded by the coordinator to the irradiation laboratories accompanied by electronic dosemeters to monitor the doses received in storage and transit. Road transport was used to avoid air travel to help reduce the risk of x-ray inspections in transit.

After irradiation, the coordinator received the dosemeters and returned them to the IC participants for evaluation along with instructions on reporting their results. The online platform was used to transfer the evaluated dose values to the coordinator.

After receiving the results, the coordinator calculated the value of the response, R, for each dosemeter by dividing the participant's result ($H_{\mathrm{p},\ participant}$) by the reference dose given by the irradiation laboratory ($H_{\mathrm{p},\ reference}$) in accordance with equation (1).

$$R = \frac{H_{\mathrm{p},\ participant}}{H_{\mathrm{p},\ reference}} \tag{1}$$

The calculated response values were downloaded from the OLP by each participant for the initial check and confirmation along with the opportunity to add any comments. Thus, each participant was informed of the radiation qualities and the doses given to their dosemeters. All comments were assessed by the OG to decide if any applications for result modification could be permitted (see Section 3.1). Note that as a general rule, the OG only accepts changes to the results when it is clear that there has been an error by the OG or by the irradiation laboratory.

The original "Certificates of Participation", signed by the coordinator and the chairperson of EURADOS, were sent by standard mail to the participants. Copies were also made available on the OLP.

The Participants Meeting had been scheduled to be held at IM2020 (23 April) in Budapest but unfortunately both of these events had to be cancelled as a result of Covid-19.

2.5 Time schedule

Announcement - Call for participants	April 2019
***Registration of participants and systems**	**May 2019**
Deadline for IMS sending application forms	31 May 2019
Deadline for IMS sending dosemeters to Coordinator	30 June 2019
Irradiations	July - September 2019
Coordinator sending dosemeters for readout	October 2019
Deadline for IMS sending dosemeters results to Coordinator	13 December 2019
Final results available	February 2020
IMS receiving certificates of participation	March 2020
Participants Meeting	Cancelled

2.6 Irradiation plan

Photon irradiation qualities were chosen from ISO 4037-1 (ISO 4037-1, 1996), ISO 4037-2 (ISO 4037-2, 1997) and ISO 4037-3 (ISO 4037-3, 1999). Beta irradiations were chosen from ISO 6980 (ISO 6980, 2015). The plan details were confidential and only known by the OG and the irradiation laboratory. The exact dose value (which was varied from the nominal value) was selected by the irradiation laboratory for each irradiation. These exact dose values were known only by the irradiation laboratory until all measured values had been reported to the coordinator.

Table 1: Outline irradiation plan for the EURADOS 2019 ICs. Irradiation qualities are reported according to ISO 4037 and ISO 6980

Quality	Radiation type	Dose range	Number of Extremity dosemeters to be irradiated	Number of Eye lens dosemeters to be irradiated	Dose range [mSv]
W-80 0°	Photon	Low	4	4	2 -10
W-80 0°	Photon	Medium	2	2	40 -60
W-80 0°	Photon	High	2	2	300 - 400
Cs-137 0°	Photon	Low	2	2	2 - 10
N-30 0°	Photon	Low	2	2	2 - 10
N-30 60°	Photon	Low	2	2	2 - 10
W-110 0°	Photon	Low	2	2	2 - 10
Sr-90 0°	Beta	Low	2	2	2 - 10
Sr-90 45°	Beta	Low	2	0	2 - 10
Kr-85 0°	Beta	Low	2	0	2 - 10
		TOTAL	22	18	

Table 2: Detailed irradiation plans for extremity for the EURADOS 2019 IC s. Irradiation qualities are reported according to ISO 4037 and ISO 6980

radiation type		quality	min (mSv)	mean (mSv)	max (mSv)
photon	X-ray	N-30	4.3	5.0	5.7
		N-30/60°	2.8	4.9	5.7
		W-80-L	4.3	5.0	5.7
		W-80-M	43	50	58
		W-80-H	315	349	382
		W-110	4.3	4.9	5.8
	gamma	Cs-137	4.3	5.0	5.8
beta		Kr-85	4.5	5.3	8.0
		Sr-90	3.0	3.5	5.0
		Sr-90/45°	2.8	2.8	3.0
All			2.8	40.0	382.0

Table 3: Detailed irradiation plans for eye lens dosemeters.

radiation type		quality	min (mSv)	mean (mSv)	max (mSv)
photon	X-ray	N-30	4.3	4.9	5.7
		N-30/60°	4.3	4.9	5.7
		W-80-L	4.3	5.0	8.5
		W-80-M	43	50	57
		W-80-H	319	343	384
		W-110	4.3	5.0	5.8
	gamma	Cs-137	4.3	5.0	5.7
beta		Sr-90	2.2	2.2	2.2
All			2.2	47.5	384.0

2.7 Participants and systems

60 IMS from 26 countries participated with a total of 113 dosimetry systems:

Table 4 provides a summary of all participating countries and the number of participating services. All information was provided by the participants on the OLP and application forms.

- 60 Participants
- 113 Systems
- 26 Countries

Table 4: Number of participants and IMS per country

Individual Monitoring Service:	60
Countries:	26: Austria; Bosnia and Herzegovina; Belgium; Bulgaria; Switzerland; Chile; Czech Republic; Germany; Denmark; Spain; France; United Kingdom; Greece; Croatia; Israel; Italy; Japan; Lithuania; Netherlands; Portugal; Romania; Serbia; Sweden; Slovenia; Turkey; United States;
EURADOS Sponsor:	

Country	no	yes	total
Austria [EU]	0	2	2
Bosnia and Herzegovina	1	0	1
Belgium [EU]	2	2	4
Bulgaria [EU]	1	0	1
Switzerland	0	2	2
Chile	1	0	1
Czech Republic [EU]	2	1	3
Germany [EU]	0	2	2
Denmark [EU]	0	1	1
Spain [EU]	2	1	3
France [EU]	1	2	3
United Kingdom [EU]	0	2	2
Greece [EU]	1	1	2
Croatia [EU]	2	1	3
Israel	2	0	2
Italy [EU]	11	0	11
Japan	1	0	1
Lithuania [EU]	2	0	2
Netherlands [EU]	0	1	1
Portugal [EU]	0	1	1
Romania [EU]	1	1	2
Serbia	1	1	2
Sweden [EU]	2	0	2
Slovenia [EU]	1	0	1
Turkey	3	0	3
United States	2	0	2
	39	21	60

Table 5: Dosimetry System Analysis – Quantity, Position and Materials

Dosimetry System

Dosimetry System:	113

Measurement Quantity:

Measurement Quantity	number
Hp(0.07)	70
Hp(3)	43
	113

Dosemeter wearing position:

Dosemeter wearing position	number
Extremity, Finger ... Hp(0.07)	48
Extremity, Fingertip ... Hp(0.07)	4
Extremity, Ankle/Wrist ... Hp(0.07)	16
Eye lens, Head ... Hp(3)	45
	113

Radiation type in certificate:

Radiation type in certificate	number
Photon results only	57
Photon and Beta results	56
	113

Detector Type / Material:

Detector Type / Material	number
Other	1
OSL - Al2O3:C	3
OSL - BeO	9
RPL	3
TL - Other	5
TL - Li2B4O7/CaSO4	8
TL - LiF:Mg,Cu,P	48
TL - LiF:Mg,Ti	36
	113

Number of detectors / filters:

Number of detectors / filters	number
1	91
2	14
3	1
4	6
> 4	1
	113

Note: This table is taken directly from the data supplied to the OLP by the participants. Two of the participants selected to report eye lens dose as $H_p(0.07)$ instead of $H_p(3)$. For the analysis in this report, all results for eye lens dosemeters have been taken as $H_p(3)$. Consequently, there are 45 reported system results for eye lens and 68 for extremity.

Figure 1: Representative selection of finger ring dosemeters

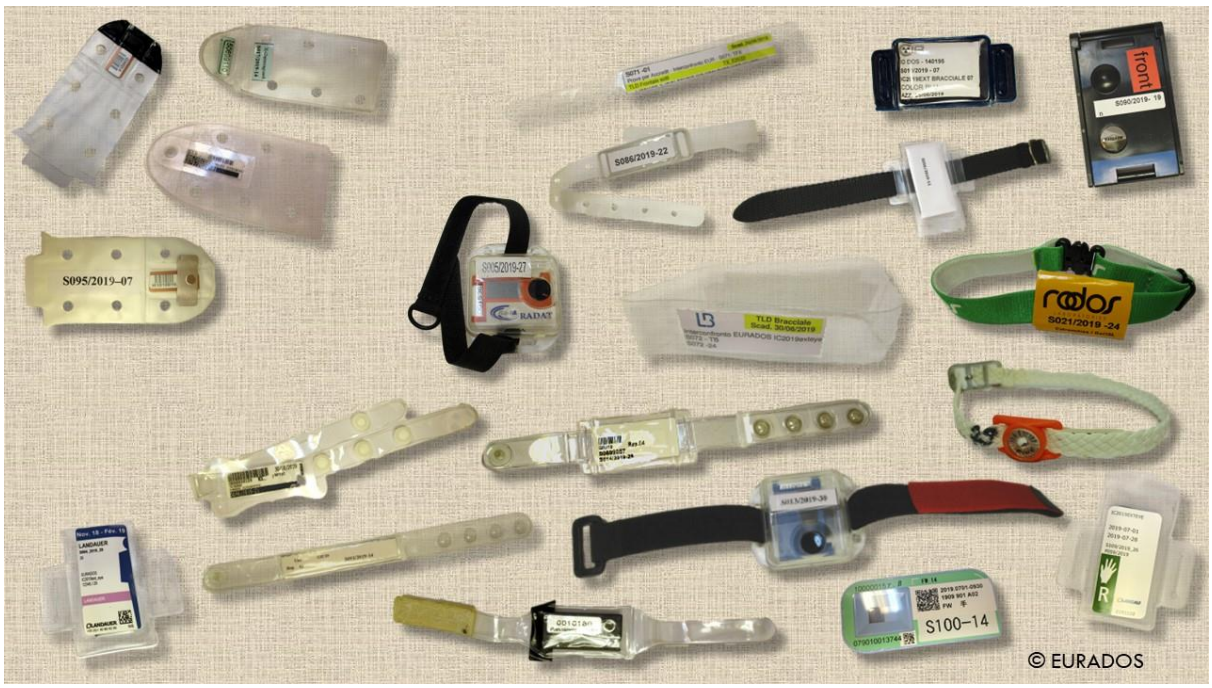


Figure 2: Representative selection of wrist and finger tip dosemeters

Figure 3: Representative selection of eye lens dosemeters

Figure 4: Representative selection of eye lens dosemeters with headbands

Table 6: Number[-1] of systems per dosimeter type and type of detector and dose quantity

	systems	% of all	% of type
Extremity	**68**	**60%**	
LiF:Mg,Cu,P	28	25%	41%
LiF:Mg,Ti	21	19%	31%
Li2B407/CaSO4	6	5%	9%
BeO	5	4%	7%
Al2O3:C	3	3%	4%
RPL	2	2%	3%
TL-Li2B4O7	1	1%	1%
Aluminophosphate glass	1	1%	1%
nLi2B4O7:Cu	1	1%	1%
Eye	**45**	**40%**	
LiF:Mg,Cu,P	20	18%	44%
LiF:Mg,Ti	15	13%	33%
BeO	4	4%	9%
Li2B407/CaSO4	2	2%	4%
Foma dosimetric film	1	1%	2%
Li2B407:Mn,Si	1	1%	2%
RPL	1	1%	2%
CaSO4:Dy	1	1%	2%
All	**113**	**100%**	**100%**

[-1] see note below Table 5 for details of total numbers of extremity and eye systems

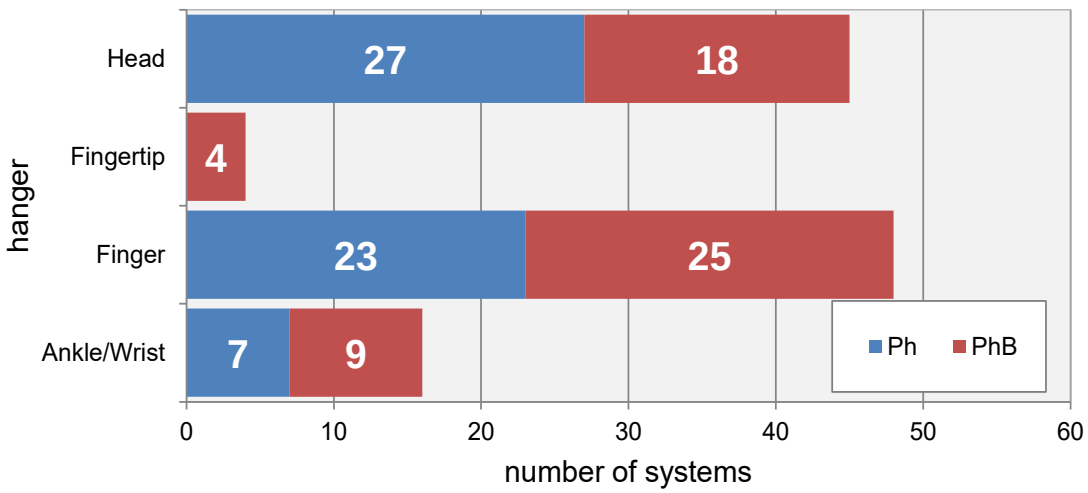


Figure 5: Summary of all systems extremity & eye (Ph for photons only, PhB for photons and betas as indicated by the participants)

Table 7: Reference radiation qualities provided by the participants

Extremity	Cs-137	66%
	Mixed	12%
	Single x-ray	22%
Eye Lens	Cs-137	56%
	Co-60	2%
	Mixed	13%
	Single x-ray	29%

2.8 Intercomparison procedure compared to ISO 14146

IC2019 was set up to meet the ISO standard (ISO 14146, 2018) "Criteria and performance limits for the periodic evaluation of dosimetry services". The performance limits set by ISO 14146 were also adopted for the analysis of the global results:

$$0.71 \cdot \left(1 - \frac{2 \cdot \frac{H_0}{1.33}}{\frac{H_0}{1.33} + H_c}\right) \leq R \leq 1.67 \cdot \left(1 + \frac{H_0}{4 \cdot H_0 + H_c}\right)$$

Where R is the response, H_c is the conventional true value and H_0 is the "lower dose limit below which irradiations should not be performed":

- H_0 = 0.3 mSv for eye lens dosimeters measuring $H_p(3)$
- H_o= 1 mSv for extremity dosimeters measuring $H_p(0.07)$

For the analysis of the global results in this report, any result exceeding the above performance limits was considered as an outlier. The standard ISO 14146:2018 allows a maximum of one-tenth of the dosemeters irradiated to exceed these limits.

In total approximately 2314 dosemeters were irradiated with GAEC carrying out 1540 photon irradiations and IRSN carrying out 774 beta irradiations.

2.8.1 Photon irradiations at GAEC

Ionizing Radiation Calibration Laboratory of the Greek Atomic Energy Commission performed the photon irradiations during summer 2019. The calibrations were performed in terms of $H_p(0.07)$ for ring and wrist dosemeters and in terms of $H_p(3)$ for eye dosemeters. For gamma irradiations the OB6 S-Cs-137(STS GMBH OB6) irradiator was used. For x-ray irradiations a PANTAK HF225 x-ray generator was used, producing 3 different qualities: W-80, W-110, N-30. Dosemeters were irradiated with angles of incidence 0° and 60 °. The characteristics of the x-ray beams are in accordance with ISO 4037/1-2-3 (ISO 4037-1, 1996) (ISO 4037-2, 1997) (ISO 4037-3, 1999).

Three different phantoms were used for the irradiation of the three different extremity dosemeters.

- Finger dosemeters: ISO rod phantom (cylinder diameter 19 mm, length 300 mm, PMMA)
- Wrist dosemeters: Cylindrical water wrist phantom (cylinder diameter 7 cm, length 30 cm)
- Eye lens dosemeters: Cylindrical water head phantom (height 20 cm and diameter 20 cm).

For gamma irradiations buildup plate with dimensions (0.2 x 30 x 30) cm^3 was used during irradiations. The K_{air} reference values were obtained using the reference/transfer ionization chambers PTW W-32002-LS01 (S/N 69) or FC65-G and the electrometer PTW UNIDOS 10002 (S/N 20314). The LS01 chamber was calibrated in PTB during 06-07/03/2019 (PTB, Cal. Cert. No PTB-6.3-4094018). The irradiation conditions are in accordance with ISO 4037/1-2-3-4. The irradiation uncertainty was calculated from 4.9% up to 5.1%.

Figure 6: Finger, wrist and head phantoms used by GAEC for photon irradiations

2.8.2 Beta irradiations at IRSN

The laboratory of dosimetry of ionizing radiation (LDRI) at the Institute for Radiological and Nuclear Safety in France (IRSN) was in charge of the beta irradiations in this intercomparison. The irradiations took place in 2019, during summer, using the equipment shown in Figure 7. This is an ISOTRACK ™– BSS2 beta irradiator placed on a table in order to obtain the reference point at a height of 1.50 m. The irradiation distance is defined by a standard gauge of 30 cm length. About 30 wrist dosimeters and 100 ring dosimeters were irradiated in each configuration in terms of $H_p(0.07)$: ^{90}Sr/Y at 0°and 45°; ^{85}Kr at 90°. About 90 eye lens dosimeters were irradiated for ^{90}Sr/Y at 0° configuration in terms of $H_p(3)$. The irradiation uncertainty was estimated to be between 5.7 and 6.2 % at k=2, depending on the configuration. The sources used for the irradiations are traceable to the PTB (IPFCO 15277-AE-4147 for ^{85}Kr and IPFCO 15277 –AG-4291 for ^{90}Sr/Y) and the phantoms designed in the ISO standard (pillar, rod and head) were used to simulate the appropriate quantity in the standard beta field described in ISO 6980-1 (ISO 6980, 2015).

Figure 7: Beta irradiator (ISOTRACK – BSS2) used in this intercomparison

2.9 Background and transit dose control

For this intercomparison a total of 32 dosemeters were required from each participant. 22 extremity and 18 eye lens dosemeters were irradiated which allowed for 10 extremity dosemeters and 14 eye lens dosemeters to be designated for "background and transit dose control" for IMS to make corrections for background and transfer dose. These dosemeters were also available for use by the irradiation laboratory in case of damage or errors during the irradiations although only a few of these were required. The coordinator did not make any adjustment for transit or background dose and all associated correction was the responsibility of the participants.

The results of the electronic dosemeters (see Section 2.4) which accompanied the participants' dosemeters for the land travel between the coordinator and the irradiation laboratories are shown in the table below. The participants were not informed of these dose values.

Table 8: EPD Transit Control Doses – road transport between coordinator and Irradiation Laboratories

Depart	Arrive	Transit Dose mSv	Depart	Arrive	Transit Dose mSv
Berkeley 11-07-2019	GAEC 26-07-2019	0.022	GAEC 14-09-2019	Berkeley 18 -09-2019	0.016
Berkeley 11-07-2019	IRSN 17-07-2019	0.010	IRSN 17-09-2019	Berkeley 18-09-2019	0.003

The coordinator provided the participants with the identification codes of the unused "background and transit dose control" dosemeters. The mean values per system for all of the non-irradiated "background and transit control" dosemeters are shown in Figure 8. It can be seen that few significant transit doses were reported and that some of the participants reported zero doses.

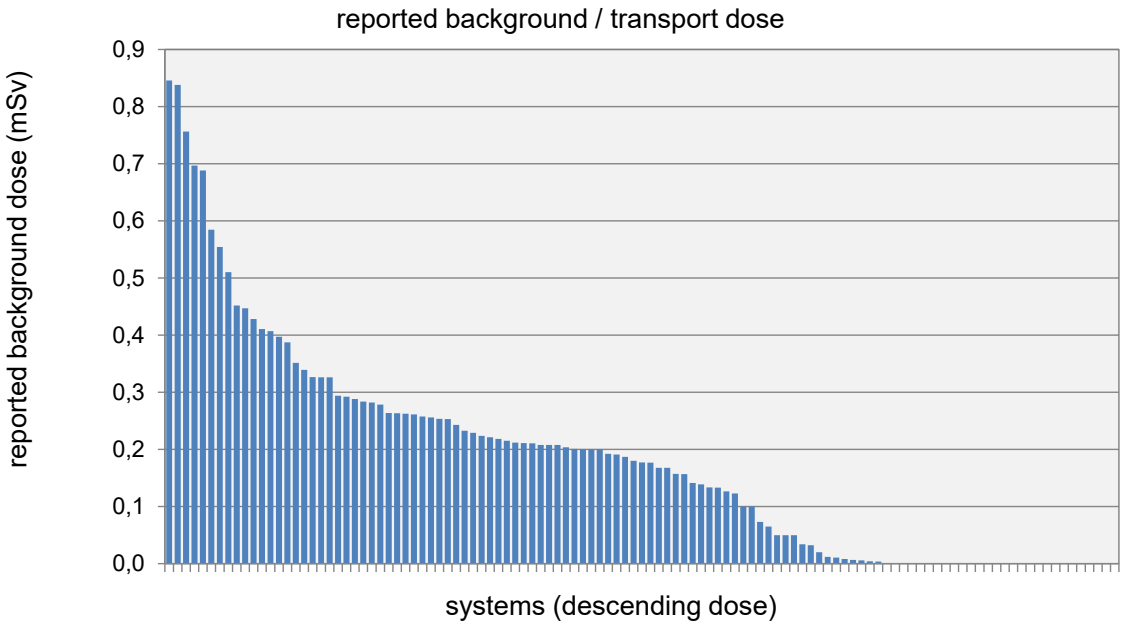


Figure 8: Background/transport doses: each bar represents the mean reported background dose value for each individual system

2.10 Confidentiality of the data and the results

The data processed by the OG is always treated confidentially for two specific reasons.

Firstly, the IC programme was designed as a blind test for all the participants. This means that participants report their results without knowing any specific details of the irradiation plan, in particular the dose values.

The dose values are reported to the participants only after the coordinator has received the dose values evaluated by the participant. At the time of application for the IC, only the ranges of dose, energies and angles are known to the participants (section: 2.4 Set-up). Direct communication between participants and the irradiation laboratory is not allowed. It is acknowledged that some IMS participate with more than one dosimetry system and that some IMS might have access to results of other participants. In order to prevent these participants guessing dose values by combining results, the irradiation plan is executed in a random order for each participant. In addition, the irradiation laboratory varies the dose values in the irradiation plan within specified ranges from participant to participant, rather than using fixed dose values for each radiation quality.

Secondly, the individual results are the property of the participants only and thus have to be kept confidential.

To assure this confidentiality the coordinator separates all information which could possibly lead to the identity of the participants from the published results. In the overviews of the results, the participating dosimetry systems are only referenced by a randomized code. All participants' certificates contained "Reporting number used in publications" known only to the participant and

the coordinator. However, once participants have received their certificates, OG has no influence on the use that participants make of their own results.

During the IC exercises significant quantities of data have to be exchanged. In order to assure data integrity, parallel data streams (paper & electronic) are used. All official results are reported on signed papers. However, the majority of the data is exchanged in electronic formats by means of the web based OLP. To maintain data security, all relevant electronic documents containing IC results (draft results or certificate) are password protected.

2.11 Certificates of participation and participants meeting

EURADOS is not accredited for the evaluation of IMS and consequently the results issued by EURADOS itself cannot be regarded as an official test report. As an alternative, the established protocol is to report the results to the individual participants in the form of a "Certificate of Participation", with the irradiation reports of the accredited irradiation laboratories as an annex.

These certificates consist of two pages. The front page shows the certificate number, the reporting number, the details of the participant, the description of the system as given by the participant and a summary of the IC procedure. The front page is signed by both the EURADOS Chairperson and the IC coordinator. The second page shows the actual results for each dosemeter, irradiation quality, value of $H_p(0.07)$ or $H_p(3)$ as reported by participant, value of $H_p(0.07)$ or $H_p(3)$ as reported by the irradiation laboratory, and the ratio of these two values. In the Certificates, no performance limits were indicated because these might differ from one participant to the other. All participants received their signed certificates by post.

3 Results and Discussion

3.1 Review of the comments received from participants

After the participants submitted the results, the coordinator processed the dose values and created a draft report for each system. These reports were made available to each participant followed by a two-week time frame to comment on their report. The participants were informed that if they requested corrections because of errors made by the OG organization, they would have to indicate the results they were requesting to be corrected and the justification. The OG would have the final decision on any amendments.

In total 6 requests were received relating to 9 separate systems:

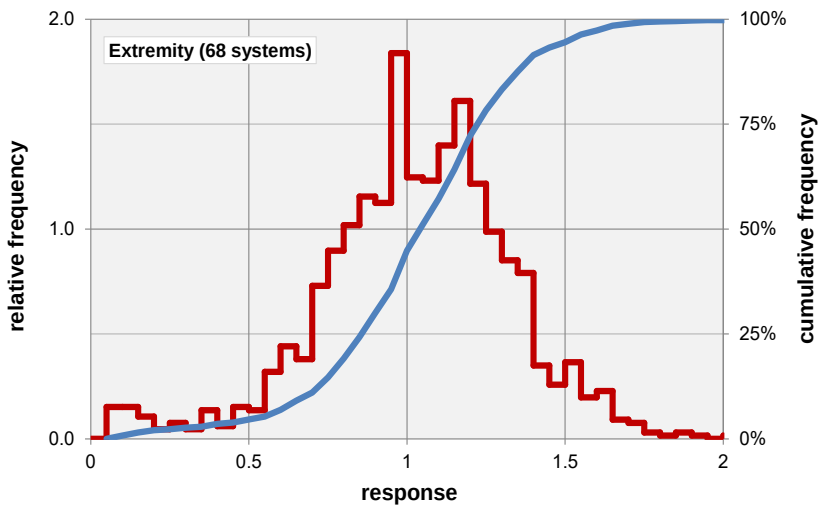
1. Lower beta results than expected – one IMS requested for information on irradiation conditions
2. Higher x-ray results than expected – one IMS requested confirmation that irradiations were correct
3. Cs-137 response higher than expected – reported by one IMS
4. Three separate IMS reported the same possible problem with one specific quality

OG convened before the release of the final results to review and discuss these requests. In this process confidentiality is maintained as far as practicable and only the coordinator knows the identity of the participants who have sent these comments.

In accordance with the terms and conditions, OG concluded that the requests 1, 2 & 3 (see above) could not be allowed and an appropriate letter was sent to these participants to explain that the OG was satisfied that all irradiations had been carried out in accordance with the appropriate ISO standards. However, after further investigation, OG concluded that there had been a problem with the one specific quality as reported by the three separate IMS (see 4 above) but it was established that none of the other participants had been affected. OG sent appropriate letters of apology informing these participants that these irradiations would be excluded from the certificates of participation.

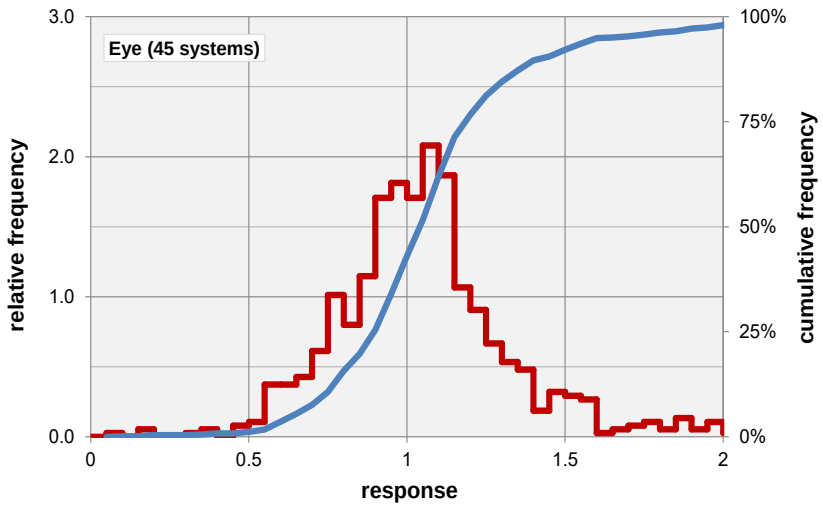
3.2 Basic statistical results

The response (R) was calculated for each dosemeter by dividing the participant's result, $H_{p,\,participant}$ by the reference dose value (given by irradiation laboratory) $H_{p,\,reference}$ in accordance with equation (1). The corresponding frequency and cumulative distributions as well as basic statistical results are given for these distributions in the next figures.



Extremity (68 systems)	
number	1316
σ−	1.33
mean	**1.03**
σ+	0.73
min	0.00
5.0%	0.53
25.0%	0.86
median	**1.04**
75.0%	1.22
95.0%	1.51
max	2.11

Figure 9: Frequency and cumulative distributions of extremity response values



Eye (45 systems)	
number	750
σ−	1.44
mean	**1.08**
σ+	0.72
min	0.06
5.0%	0.65
25.0%	0.90
median	**1.04**
75.0%	1.18
95.0%	1.60
max	4.60

Figure 10: Frequency and cumulative distributions of eye response values

3.3 Response values per radiation quality

The energy and the angular response is given in the next diagrams.

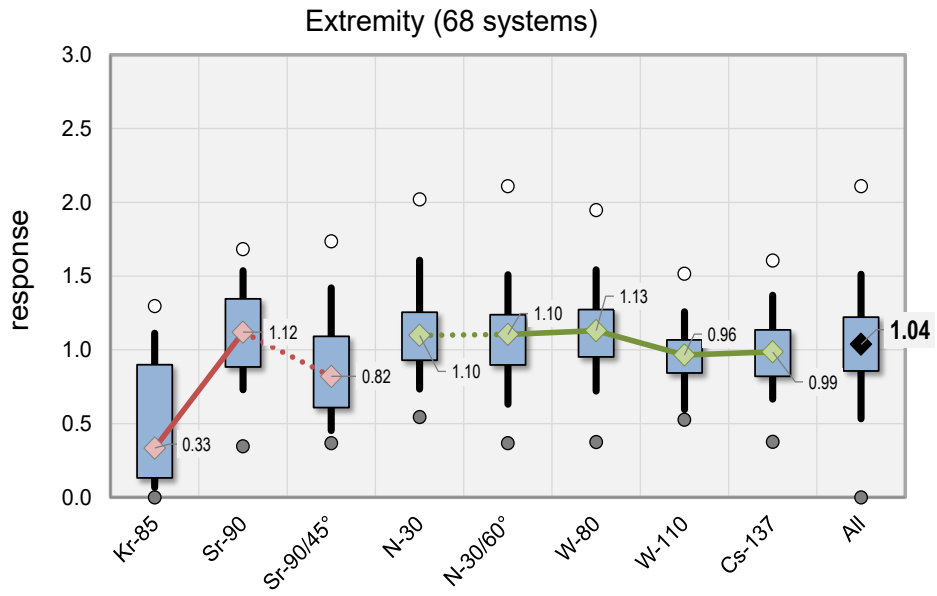
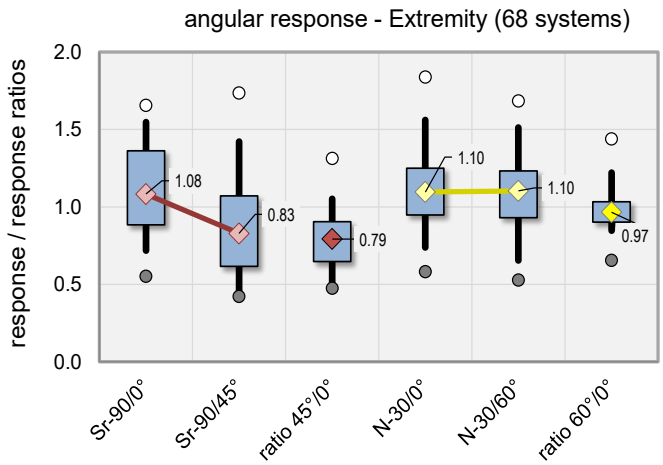


Figure 11: Distributions of all $H_p(0.07)$ response values for different radiation qualities. Diamond (Median), box (50% range), bar (90% range), dots (minimum, maximum).



ratio 45°/0°		ratio 60°/0°	
number	38	**number**	68
σ–	0.97	σ–	1.12
mean	**0.78**	**mean**	**0.99**
σ+	0.60	σ+	0.85
min	0.48	min	0.66
5.0%	0.48	5.0%	0.85
25.0%	0.65	25.0%	0.90
median	**0.79**	**median**	**0.97**
75.0%	0.90	75.0%	1.03
95.0%	1.05	95.0%	1.22
max	1.31	max	1.44

Figure 12: Distributions of all $H_p(0.07)$ mean response values for single systems for Sr-90 (only for beta dosemeters) and N-30 and different radiation angles and the corresponding ratios. Diamond (Median), box (50% range), bar (90% range), dots (minimum, maximum).

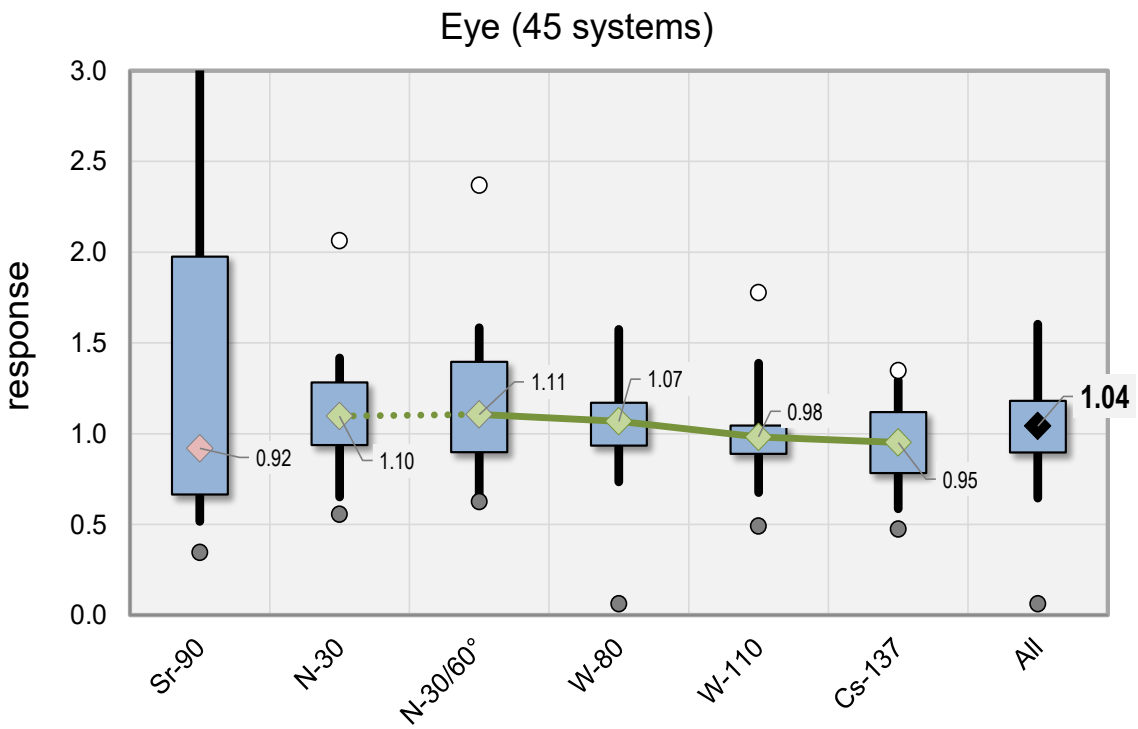
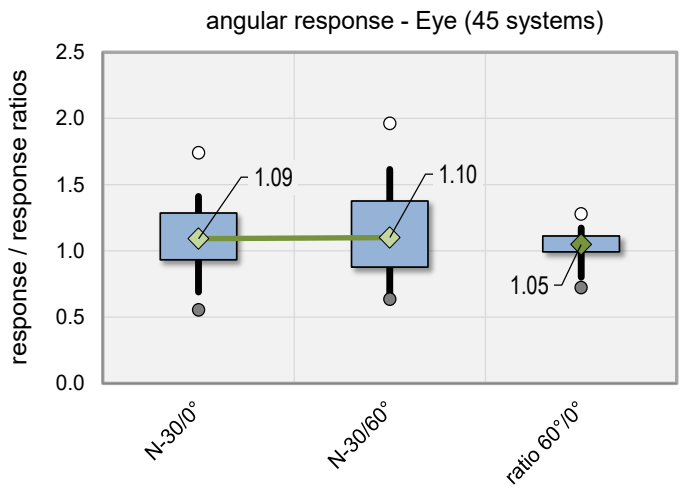


Figure 13: Distributions of all $H_p(3)$ response values for different radiation qualities. Diamond (Median), box (50% range), bar (90% range), dots (minimum, maximum).

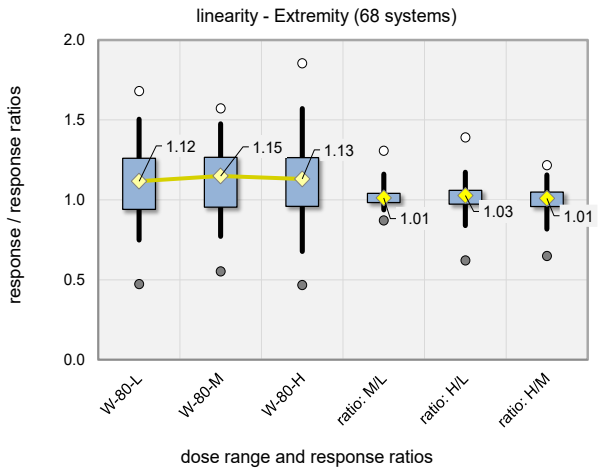


ratio 60°/0°	
number	42
σ–	1.14
mean	**1.03**
σ+	0.91
min	0.72
5.0%	0.80
25.0%	0.99
median	**1.05**
75.0%	1.11
95.0%	1.17
max	1.28

Figure 14: Distributions of all $H_p(3)$ mean response values for single systems for N-30 and different radiation angles and the corresponding ratio. Diamond (median), box (50% range), bar (90% range), dots (minimum, maximum).

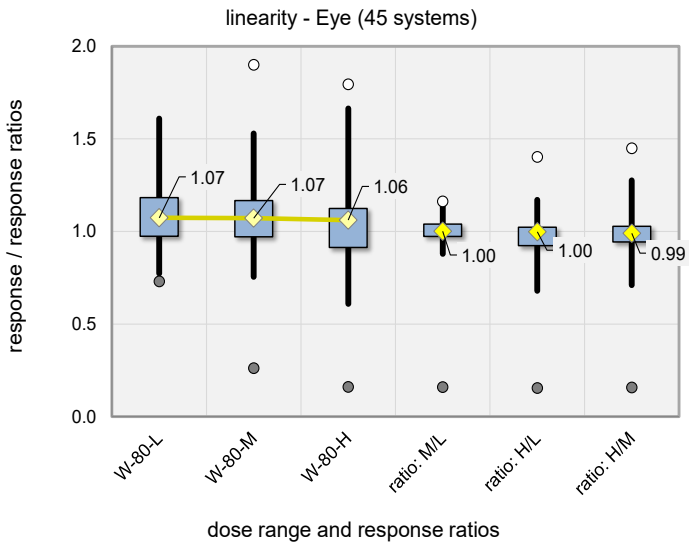
3.4 Linearity

Linearity was tested (using W-80) through a range, from 2 mSv to 400 mSv, without varying any other parameter.



ratio: H/L	
number	68
σ–	1.13
mean	**1.02**
σ+	0.90
min	0.62
5.0%	0.84
25.0%	0.97
median	**1.03**
75.0%	1.06
95.0%	1.17
max	1.39

Figure 15: Distribution of the mean $H_p(0.07)$ response values for W-80 irradiations for different doses (L: low dose; M: medium dose; H: high dose) and the distribution for different mean response ratios



ratio: H/L	
number	45
σ–	1.16
mean	**0.95**
σ+	0.75
min	0.15
5.0%	0.68
25.0%	0.92
median	**1.00**
75.0%	1.02
95.0%	1.17
max	1.40

Figure 16: Distribution of the mean $H_p(3)$ response values for W-80 irradiations for different doses (L: low dose; M: medium dose; H: high dose) and the distribution for different mean response ratios

3.5 Response values as a function of reference doses

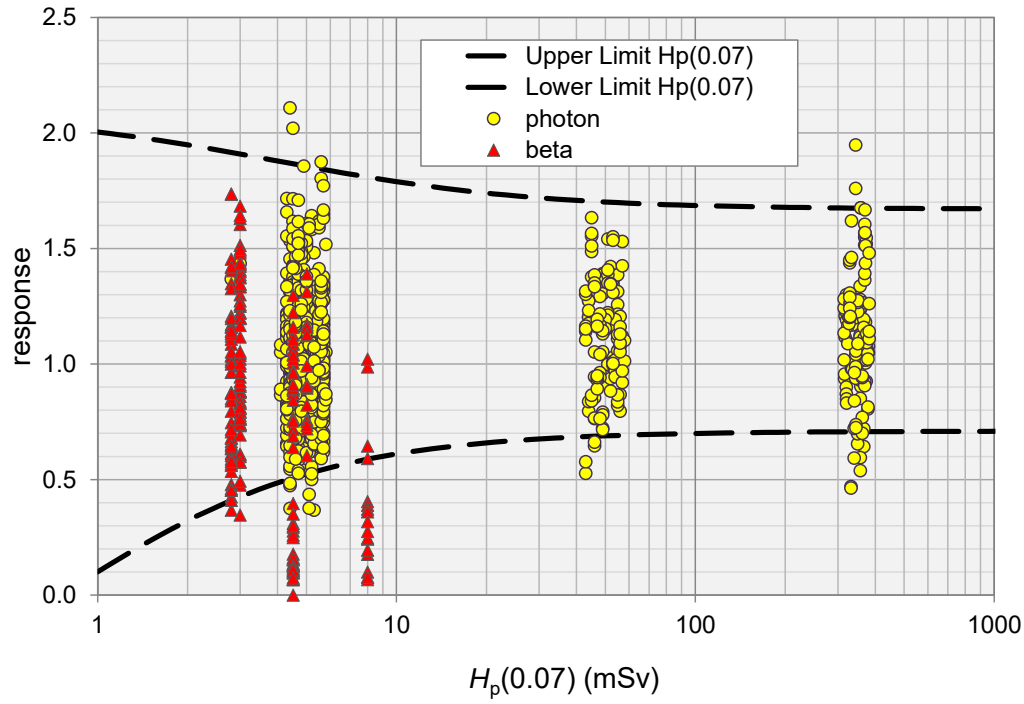


Figure 17: Response values (lin) for $H_p(0.07)$ as a function of reference dose. The dashed lines represent the trumpet curves

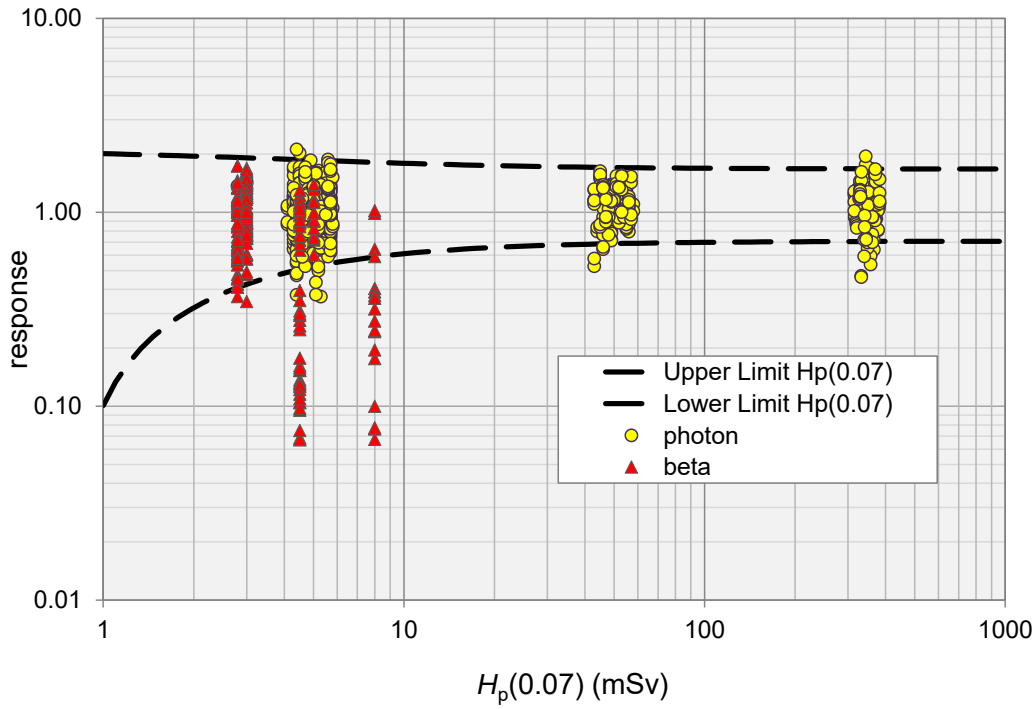


Figure 18: Response values (log) for $H_p(0.07)$ as a function of reference dose. The dashed lines represent the trumpet curves

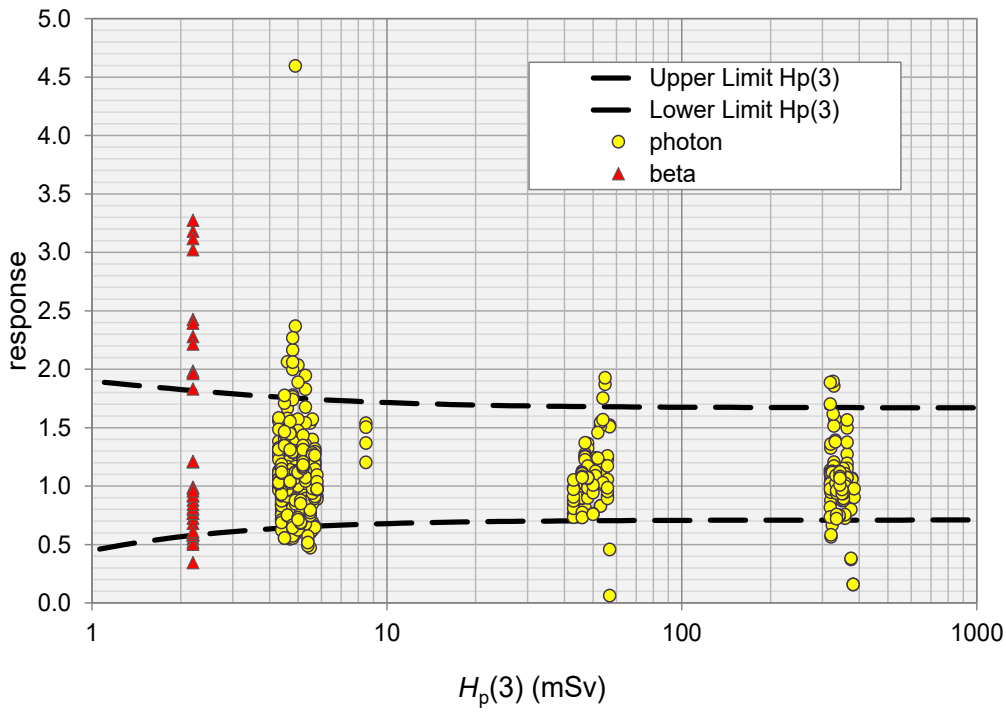


Figure 19: Response values (lin) for $H_p(3)$ as a function of reference dose. The dashed lines represent the trumpet curves

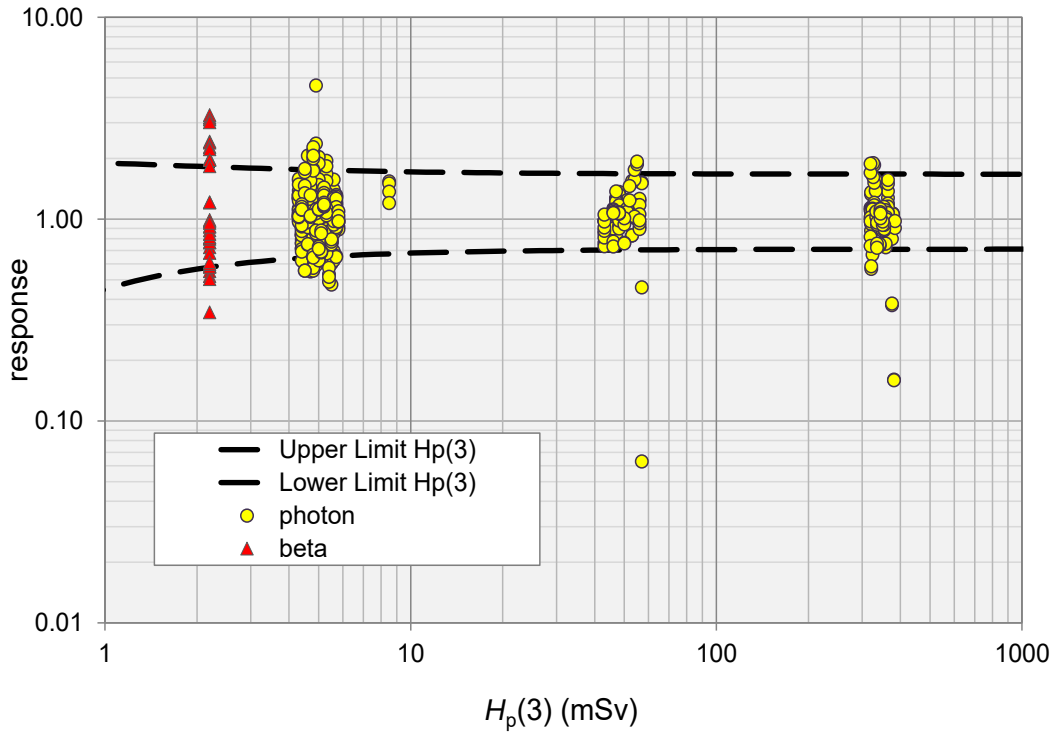


Figure 20: Response values (log) for $H_p(3)$ as a function of reference dose. The dashed lines represent the trumpet curves

3.6 Outliers

Table 9: Outliers - Extremity (defining outliers as response values outside of the trumpet curves)

Extremity - number of Outliers				
Radiation	Quality	Ph	PhB	All
beta	Kr-85/0°		44	44
	Sr-90/0°		1	1
	Sr-90/45°		1	1
	all betas		**46**	**46**
photon	N-30/0°	1	1	2
	N-30/60°	2	2	4
	W-80/0°	16	5	21
	W-110/0°	0	0	0
	Cs-137/0°	2	0	2
	all photons	**21**	**8**	**29**
All		**21**	**54**	**75**

Extremity - Outliers (%)				
Radiation	Quality	Ph	PhB	All
beta	Kr-85/0°		57.9%	57.9%
	Sr-90/0°		1.3%	1.3%
	Sr-90/45°		1.3%	1.3%
	all betas		**20.2%**	**20.2%**
photon	N-30/0°	1.7%	1.3%	1.5%
	N-30/60°	3.3%	2.6%	2.9%
	W-80/0°	6.7%	1.6%	3.9%
	W-110/0°	0.0%	0.0%	0.0%
	Cs-137/0°	3.3%	0.0%	1.5%
	all photons	**4.4%**	**1.3%**	**2.7%**
All		**4.4%**	**6.5%**	**5.7%**

Table 10: Outliers - Eye (defining outliers as response values outside of the trumpet curves)

Eye - number of Outliers				
Radiation	Quality	Ph	PhB	All
beta	Sr-90/0°		16	16
photon	N-30/0°	4	2	6
	N-30/60°	2	6	8
	W-80/0°	20	8	28
	W-110/0°	4	0	4
	Cs-137/0°	7	0	7
	all photons	**37**	**16**	**53**
All		**37**	**32**	**69**

Eye - Outliers (%)				
Radiation	Quality	Ph	PhB	All
beta	Sr-90/0°		44.4%	44.4%
photon	N-30/0°	7.7%	6.3%	7.1%
	N-30/60°	3.7%	16.7%	8.9%
	W-80/0°	9.3%	5.6%	7.8%
	W-110/0°	7.4%	0.0%	4.4%
	Cs-137/0°	13.0%	0.0%	7.8%
	all photons	**8.6%**	**5.6%**	**7.4%**
All		**8.6%**	**10.0%**	**9.2%**

3.7 Results for individual systems

This paragraph presents results for individual systems separately (but anonymously). Individual systems are represented with a "reporting number". This number was randomly assigned and has no relation to the participant number as used by the organizer for keeping track of correspondence etc.

Response values for each individual system are shown separately (by anonymous "reporting number") in Figure 16, Figure 17 and Figure 18. It shows that most outliers are associated with a relatively small number of systems. Some systems show a significant bias, others have a greater than normal spread of results.

It should be noted, as in previous ICs, that there are examples of excellent performances within each type of dosimetry system.

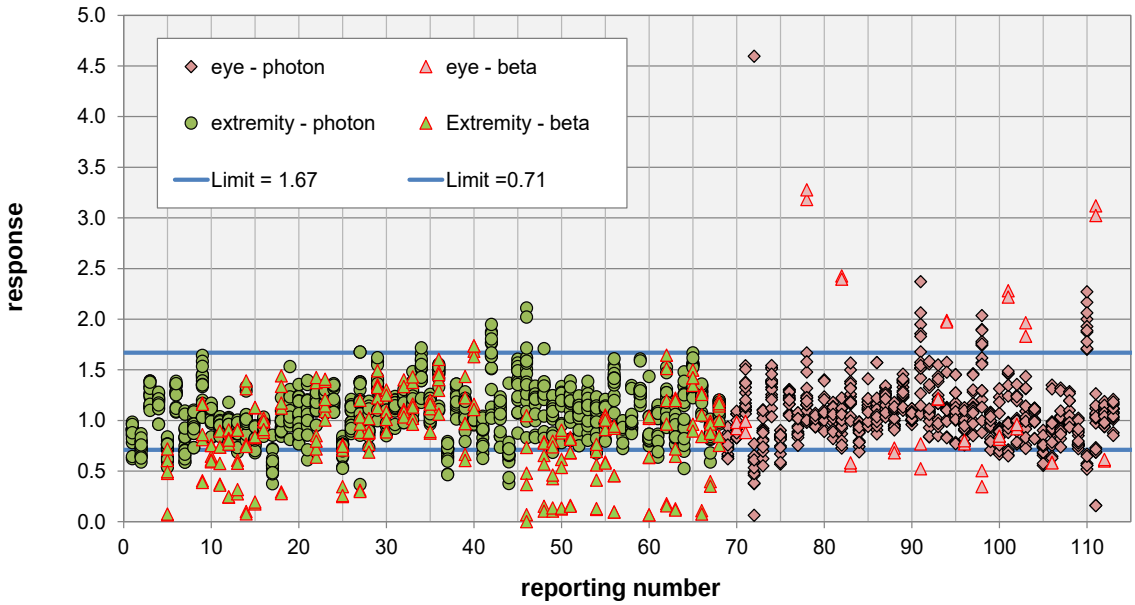


Figure 21: Response values (lin) for $H_p(0.07)$ and $H_p(3)$ for each individual participant system

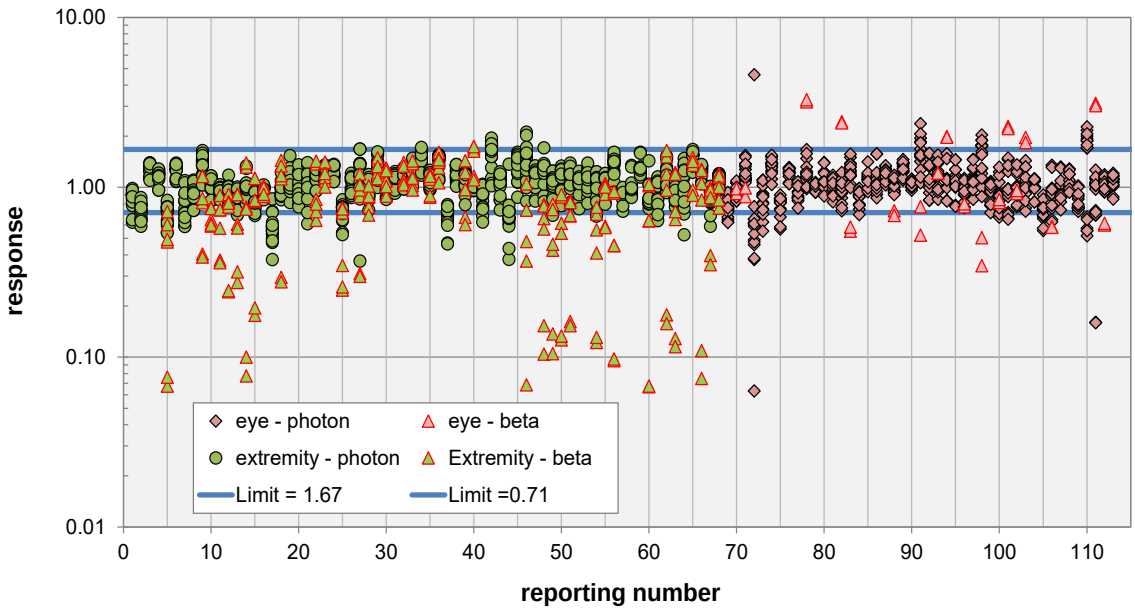


Figure 22: Response values (log) for $H_p(0.07)$ and $H_p(3)$ for each individual participant system

For each participating system a separate datasheet was prepared summarizing all the results and the underlying data. Data for $H_p(0.07)$ and $H_p(3)$ (if any) is presented in separate sheets. Each sheet shows the data reported by the irradiation laboratory and by the participant, and the response value calculated from these values (separately for each irradiation). Data has been combined for the radiation qualities and some statistical quantities are also provided. Two figures have been included

to show the response values in the trumpet curve and the response values for the different radiation qualities.

These sheets have been prepared primarily to enable the participants to analyse their own results and to compare these with the results of the other participants. The individual results will not be analysed in further detail in this report. The datasheets for all participants can be inspected in Appendix F.

4 Conclusions

EURADOS WG2 carried out $IC2019_{exteye}$ for extremity and eye lens dosemeters as part of the programme which EURADOS has developed for self-sustained ICs for IMS for external radiation. It has been established that the results from these ICs can assist all participants to demonstrate compliance within their own quality management system, compare their results with other participants and develop action plans for improving their own systems.

$IC2019_{exteye}$ had 113 participating systems (68 extremity and 45 eye lens) from 60 institutes with participants from 39 countries from around the world. In general, the participants showed a very satisfactory performance with the median of all response values very close to unity. This finding confirms that, in general, the calibration procedures, especially the traceability to standard metrology laboratories, meet the required standards without any general bias. However, the results, in particular the outliers, also indicate that a small number of IMS could improve the quality of their systems by reviewing their calibration procedures.

From the statistical overviews of the results, the reports provided by the irradiation laboratories and the remarks received from the participants, it can be concluded that the intercomparison exercise was successful and that there were no significant issues encountered by the intercomparison organization or the irradiation laboratories during the execution of the exercise.

Specific additional information was supplied by the participants. This allowed a more detailed analysis of the results with respect to detector type. The observed characteristics are generally in agreement with results established in scientific literature.

The high number of participating systems confirms that there is a significant demand for regular, internationally organized, ICs and that these are of operational value for individual monitoring services. Therefore, it is planned to continue with this programme of EURADOS ICs.

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Figures and tables

Appendix A: Previous whole body and extremity intercomparisons organised by EURADOS WG2

Intercomparison Type of dosemeter	Systems / IMS / Countries	Dosemeters required / irradiated	Quantities compared	Radiation categories
IC2008 Whole body	62 / 52 / 21	26 / 20	$H_p(10)$ and $H_p(0.07)$	S-Cs, S-Co, N-60(0°,45°), N-150(±45°), N-60+S-Cs
$IC2009_{ext}$ Extremity	59 / 44 / 18	28 / 22	$H_p(0.07)$	S-Cs, N-20, W-80(0°, 60°), N-150, ^{85}Kr,^{90}Sr (0°, 60°)
IC2010 Whole body	85 / 70 / 30	26 / 20	$H_p(10)$ and $H_p(0.07)$	S-Cs, S-Co, N-40(30°), W-110 (45°), N-40+S-Cs, W-250+S-Cs
$IC2012_{ph}$ Whole body	88 / 74 / 30	26 / 16	$H_p(10)$ and $H_p(0.07)$	S-Cs, S-Co, N-60(0°,60°)
$IC2012_n$ Whole body neutron	34 / 31 / 18	36 / 24	$H_p(10)$	250 keV neutrons, ^{252}Cf(0°, 45°), $^{252}Cf(D_2O)$, ^{252}Cf+shadow cone
IC2014 Whole body	112 / 96 / 35	30 / 20	$H_p(10)$ and $H_p(0.07)$	S-Cs, S-Co, W-80(0°,60°), W-150, RQR7
$IC2015_{ext}$ Extremity	72 / 52 / 22	30 / 22	$H_p(0.07)$	S-Cs, RQR3(0°,60°) W-80, RQR9, ^{90}Sr+S-Cs, Kr-85 ^{90}Sr(0°,60°)
IC2016 Whole body	103 / 86 / 36	30 / 22	$H_p(10)$ and $H_p(0.07)$	S-Cs, S-Co, N-40(0°,60°), N-150 (0°,45°) S-Cs+^{90}Sr
$IC2017_n$ Whole body neutron	33 / 32 / 17	40 / 28	$H_p(10)$	^{252}Cf (0°,45°), ^{252}Cf+S-Cs, ^{241}Am-Be, $^{252}Cf(D_2O)$, ^{252}Cf+shadow block

Intercomparison Type of dosemeter	Systems / IMS / Countries	Dosemeters required / irradiated	Quantities compared	Radiation categories
IC2018 Whole Body	121 /101 /40	34 / 22	$H_p(10)$ and $H_p(0.07)$	S-Cs, S-Co, N-60(0°,60°), N-150 (60°) W-110
IC2019$_{exteye}$ Extremity and Eye Lens	113 / 60 / 26 68: $H_p(0.07)$ 45: $H_p(3)$	$H_p(0.07)$ 32 / 22 $H_p(3)$ 32 /18	$H_p(0.07)$ and $H_p(3)$	S-Cs W-80 N-30 N-30 60° W-110 Sr-90 Sr-90 45° Kr-85

Appendix B: List of participants

(Participants sorted alphabetically by country and institute)

Institute	Place	Country	Ext	Eye
International Atomic Energy Agency	Vienna	Austria	X	
Seibersdorf Labor GmbH	Seibersdorf	Austria	X	X
AV-CONTROLATOM	Vilvoorde	Belgium	X	X
Belgoprocess	Dessel	Belgium	X	X
Dosimetrie SCK-CEN	Mol	Belgium	X	X
Personendosimetrie UZ Leuven	Leuven	Belgium	X	
Ekoteh DOO Mostar	Mostar	Bosnia and Herzegovina	X	
Laboratories Protecta	Sofia	Bulgaria		X
OSL Control Chile SA	Santiago de Chile	Chile	X	X
Ekoteh Dosimetry Co Ltd	Zagreb	Croatia	X	
Ruđer Bošković Institute	Zagreb	Croatia	X	X
Institute for Medical Research and Occupational Health	Zagreb	Croatia	X	X
National Radiation Protection Institute	Praha	Czech Republic		X
Nuvia Dosimetry	Praha	Czech Republic	X	X
Sluzba osobni dozimetrie VF	Cerna Hora	Czech Republic	X	
Danish Health Authority	Herlev	Denmark	X	X
Laboratoire de Dosimétrie de l'IRSN	Croissy-sur-Seine	France	X	X
LANDAUER	Vélizy-Villacoublay Cedex	France	X	X
Orano Cycle La Hague Activite Dosimetrie	La Hague	France	X	X
AWST	München	Germany	X	X

Institute	Place	Country	Ext	Eye
Landesanstalt für Personendosimetrie und Strahlenschutzausbildung Mecklenburg-Vorpommern	Berlin	Germany	X	X
Mediray Personnel Dosimetry Laboratory	Athens	Greece	X	
Personal Dosimetry Departement of Greek Atomic Energy Commissiion	Agia Paraskevi, Attiki	Greece	X	X
NRCN	Beer-Sheva	Israel	X	
Soreq NRC	Yavne	Israel		X
AOU Careggi	Firenze	Italy		X
CIR sas	Rome	Italy	X	X
Dosimetrie-Service Bozen	Bozen	Italy	X	
ENEA Radiation Protection Institute Individual Monitoring Dosimetry Service -	Bologna	Italy	X	X
EUROPEAN COMMISSION - JOINT RESEARCH CENTRE - Dosimetry Service	Ispra (VA)	Italy	X	
L.B. Servizi per le Aziende Srl	Roma	Italy	X	X
Lavoro e Ambiente srl	Forlì (FC)	Italy	X	X
MCF Ambiente Srl	Pasian di Prato (Udine)	Italy	X	X
Nucleonova Srl	Palermo	Italy	X	
Servizio Dooosimetrico Azienda USL Della Romagna	Cesena	Italy	X	
Tecnorad s.u.r.l.	Verona	Italy	X	X
X-GAMMAGUARD	Saronno (VA)	Italy	X	X
Chiyoda Technol Corporation	Ibaraki	Japan	X	X
Radiation Protection Centre	Vilnius	Lithuania		X
Mirion	Arnhem	Netherlands	X	X
IST-LPSR	Bobadela LRS	Portugal	X	
DOZIMED S.R.L.	Magurele	Romania	X	X
Rodos Laboratories	Magurele	Romania	X	X

Institute	Place	Country	Ext	Eye
Vinca Institute of Nuclear Sciences,Radiation and Environmental Protection Department	Belgrade	Serbia	X	X
X-ray Kosutic – Ekoteh dozimetrija doo	Beograd	Serbia	X	
Slovak legal metrology, non-profit org.	Bratislava	Slovakia		
Jozef Stefan Institute	Ljubljana	Slovenia	X	
ZVD	Ljubljana Polje	Slovenia		
Centro De Dosimetria	Barcelona	Spain	X	X
Centro Nacional de Dosimetria	Valencia	Spain	X	X
CIEMAT External Dosimetry Service	Madrid	Spain	X	
Landauer Nordic Holdings AB	Uppsala	Sweden	X	X
Ringhals AB	Varobacka	Sweden		X
Dosilab	Köniz	Switzerland	X	X
Paul Scherrer Institut	Villigen PSI	Switzerland	X	
RADAT Dosimetry Laboratory Services Co.	Ankara	Turkey	X	X
RADKOR Training Teaching Medical Production Energy Electricity Electronic and Information Technology Ltd. Co.	Ankara	Turkey	X	X
Turkish Atomic Energy Authority Individual Monitoring Service	Ankara	Turkey	X	
Berkeley Approved Dosimetry Service	Berkeley	United Kingdom	X	X
Nuvia Harwell	Harwell	United Kingdom	X	
Landauer	Glenwood, IL	United States	X	X
Mirion Technologies (GDS), Inc.	Irvine	United States	X	X

Appendix C: Example Irradiation Certificate - photon

IRRADIATION CERTIFICATE FOR PERSONNAL DOSEMETERS
EEAE-IRCL-Cal. Cert. No: DOS /2353-[redacted]/19

E ERG(D)04 05
Page 1 of 2

Calibrations
Cert. No 116(a)

HELLENIC REPUBLIC
MINISTRY OF DEVELOPMENT AND INVESTMENTS
GENERAL SECRETARIAT FOR RESEARCH & TECHNOLOGY

Ag. Paraskevi, 16/01/2020
Our Ref: B/428/842/2020

EEAE ΕΛΛΗΝΙΚΗ ΕΠΙΤΡΟΠΗ ΑΤΟΜΙΚΗΣ ΕΝΕΡΓΕΙΑΣ
GREEK ATOMIC ENERGY COMMISSION

IONIZING RADIATION CALIBRATION LABORATORY
Affiliated to the Hellenic Metrology Institute

IRRADIATION CERTIFICATE No: DOS /2353-[redacted]/19
Number of Pages: 2
Date of Issue: 20/01/2020

The following personnel dosimeters from:	EURADOS INTERCOMPARISON PROGRAM System No: [redacted]

have been irradiated at the ***Ionizing Radiation Calibration Laboratory of Greek Atomic Energy Commission:***

Personal Dosimeters (PD):	Ring
Dosimeter Identification:	-
Detection Principle:	-

Irradiation Period:	See below

The Kair reference values have been obtained using the reference/transfer ionization chambers PTW W-32002-LS01 (S/N 69) or FC65-G and the electrometer PTW UNIDOS 10002 (S/N 20314). The LS01 chamber was calibrated in PTB during 06-07/03/2019 (PTB, Cal. Cert. No PTB-6.3-4094018).
The irradiation conditions are in accordance to ISO 4037/1-2-3-4 and IEC 62387.

Irradiation conditions

Phantom:	ISO rod phantom (cylinder diameter 19 mm, length 300 mm, PMMA)
Source to PD Distance:	100-200 cm, depending on required Kair rate
Kair Rate:	S-Cs: 217.1 μGy/min (at 150 cm) W-80: 2.64 mGy/min (at 200 cm) W-110: 1.96 mGy/min (at 200 cm) N-30: 0.36 mGy/min (at 150 cm)
Field Size:	S-Cs: Circular with diameter of 55.6 cm (at 200 cm) x-rays: Circular with diameter 26.8 cm (at 200 cm)
Build up PMMA:	S-Cs: (0.2 x 30x30) cm^3
Reference point of PD:	Phantom surface

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e-mail: argiro.boziari@eeae.gr, info@eeae.gr Website: http//www.eeae.gr

IRRADIATION CERTIFICATE FOR PERSONNAL DOSEMETERS
EEAE-IRCL-Cal. Cert. No: DOS /2353-[redacted]/19

E ERG(D)04 05
Page 2 of 2

Environmental conditions during irradiations:

Temperature	Pressure	Relative Humidity
20.0-22.5 °C	979.0-985.0 hPa	10 %

Irradiation Data

# Dosemeter	Date	Quality	Hp (0.07) mSv	U % [1]
[redacted]08	27/08/2019	S-Cs	5.70	4.9
[redacted]12	27/08/2019	S-Cs	5.70	4.9
[redacted]04	30/08/2019	W-80	4.70	4.9
[redacted]05	30/08/2019	W-80	4.70	4.9
[redacted]14	30/08/2019	W-80	4.70	4.9
[redacted]16	30/08/2019	W-80	4.70	4.9
[redacted]31	09/10/2019	W-80	53.0	4.9
[redacted]32	09/10/2019	W-80	53.0	4.9
[redacted]10	07/10/2019	W-80	370	4.9
[redacted]11	07/10/2019	W-80	370	4.9
[redacted]03	05/09/2019	W-110	4.30	4.9
[redacted]07	05/09/2019	W-110	4.30	4.9
[redacted]18	05/09/2019	N-30	4.80	4.9
[redacted]23	05/09/2019	N-30	4.80	4.9
[redacted]26	08/10/2019	N-30 60°	5.60	5.1
[redacted]01	08/10/2019	N-30 60°	5.60	5.1

[1]U= uncertainty 95% confidence level (k=2)

Background dosemeters: [redacted]13, [redacted]17, [redacted]28, [redacted]9.

Irradiations performed by:

Boziari A., Medical Physicist
Konstantinou P., Technician
Askounis P., Physicist

ARGYRO BOZIARI

Digitally signed by ARGYRO BOZIARI
DN: o=Hellenic Public Administration Certification Services, serialNumber=ERMIS-25417930, ou=ELLINIKI EPITROPI ATOMIKIS ENERGEIAS, ou=GREEK ATOMIC ENERGY COMMISSION, c=GR, email=argiro.boziari@eeae.gr, sn=BOZIARI, givenName=ARGYRO, ou=ΑΡΓΥΡΩ ΜΠΟΖΙΑΡΗ, cn=ARGYRO BOZIARI
Date: 2020.02.06 10:38:55 +02'00'

Argiro Boziari
Scientific Personnel of the IRCL
Ionizing Radiation Calibration Laboratory

ΕΣΥΔ
Calibrations Cert. No 116(4)

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Appendix D: Example Irradiation Certificate - beta

IRSN
INSTITUT
DE RADIOPROTECTION
ET DE SÛRETÉ NUCLÉAIRE

PSE-SANTE/SDOS/LDRI
BP 17
92262 Fontenay-aux-Roses
CEDEX France
Tél : 01.58.35.87.62
Fax : 01.47.46.97.77

Test report

N° 2019-[redacted]

Subject : EURADOS comparison exercise 2019 - Beta irradiation of personnal extremity and eye lens dosemeters in terms of personnal dose equivalent

Ordered by : EURADOS Working Group 2 "Harmonisation of individual Monitoring"

Participant : EURADOS comparison dosimeter system
Identification [redacted]

Dosemeter : Personnal dosemeters

This report includes 3 pages
Date of issue: 23th February 2020

Technical Manager of calibration activities

L. VAN-RYCKEGHEM

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IRSN

1. METHOD

The irradiations are performed in terms of personal dose equivalent, Hp(0.07) or Hp(3) according to the Standard ISO 6980 [1-3]. The unity of this quantity is mSv.

The calibration equipment is a « beta Secondary Standard 2 » manufactured by ISOTRAK/PTB [4]. The radioactive sources used during this comparison exercise are 90Sr/Y and 85Kr. The traceability of these standards is established by the national standard laboratory, PTB (Physikalisch-Technische Bundesanstalt).

The reference quantity is established in terms of personal dose equivalent, Hp(0.07) or Hp(3), calculated by the BBS2 program [4] including the irradiation conditions. The angular conversion coefficients used in the program are those recommended by ISO Standard 6980-3 [3].

2. RADIATION FIELD AND IRRADIATION SET-UP

Each dosimeter irradiated is placed in the front face of the phantom according to the ISO-6980 standard. The phantom is positioned perpendicularly to the incident beta radiation field. Dosimeters are fixed on the phantom within ± 50 mm from the centre of the axis of the radiation field.

The irradiation configuration is as follows:

- Distance source - test point of the dosemeter: 30 cm. The test point corresponds to the reference point of the dosemeter defined by the participant;
- Diameter of the field and homogeneity: 15 cm in diameter with a factor of homogeneity of 1;
- Rotation axis: the rotation axis is parallel to the axis of the phantom and goes through the reference point of the dosemeter;
- Phantom for wrist dosemeter: ISO pillar phantom is a water-filled hollow cylinder with PMMA walls and an outer diameter of 73mm and 300 mm in length;
- Phantom for ring dosemeter: ISO rod phantom is cylindrical PMMA phantom with a diameter of 19 mm and 300 mm in length.
- Phantom for head dosemeter: ISO phantom is a water-filled hollow cylinder with PMMA walls with a diameter of 200 mm and a 200 mm in length.

IRSN
INSTITUT DE RADIOPROTECTION ET DE SÛRETÉ NUCLÉAIRE

3. ENVIRONMENTAL CONDITIONS

- Temperature, T : 21 °C to 22.9°C
- Atmospheric pressure, P : 998 hPa to 1007.8 hPa
- Relative air humidity, H : 36 % to 63%

4. IRRADIATION RESULTS

The results are included in the following table:

Bagde	Type	Source	Angle(°)	Quantity	Dose (mSv)	Uncertainty % (k=2)	Date	Comments
2019-024	Wrist	$^{90}Sr/Y$	0	Hp(0,07)	5.02	5.7	22/08/2019	wrong irradiation
2019-022	Wrist	$^{90}Sr/Y$	0	Hp(0,07)	5.02	5.7	22/08/2019	wrong irradiation
2019-09	Ring	$^{90}Sr/Y$	0	Hp(0,07)	3	5.7	02/09/2019	
2019-19	Ring	$^{90}Sr/Y$	0	Hp(0,07)	3	5.7	02/09/2019	
2019-20	Ring	^{85}Kr	0	Hp(0,07)	4.511	5.9	05/09/2019	
2019-21	Ring	^{85}Kr	0	Hp(0,07)	4.511	5.9	05/09/2019	
2019-15	Ring	$^{90}Sr/Y$	45	Hp(0,07)	2.8	6.2	09/09/2019	
2019-25	Ring	$^{90}Sr/Y$	45	Hp(0,07)	2.8	6,2	09/09/2019	

Comments: the "wrong irradiation" corresponds to the case where a technical problem during the irradiation of the dosemeters happened. The dose is not well defined in this case.

Uncertainty:

According to the Guide to the expression of uncertainty in measurement [5], the budget uncertainty is calculated as the quadratic combination of each contribution of uncertainty with the uncertainty due to the determination of the reference quantity given by the BSS2 program. The expanded uncertainties for personal dose equivalent are calculated with a coverage factor of two.

5. REFERENCES

[1] ISO-6980-1. Reference beta-particle radiation - part 1: Methods of production (2006).

[2] ISO 6980-2. Reference beta particle radiation - part 2: Calibration fundamentals related to basic quantities characterizing the radiation fields (2005).

[3] ISO-6980-3. Reference beta particle radiation - part 3: Calibration of area and personal dosemeters and the determination of their response as a function of beta radiation energy and angle of incidence (2007).

[4] AEA Technology - ISOTRAK - Operation Manual Beta Secondary Standard 2 BBS2 (2000).

[5] JCGM 100:2008 - Evaluation of measurement data - Guide to the expression of uncertainty in measurement (2008).

Test report 2019-[redacted]

Appendix E: Example "Certificate of Participation"

EURADOS European Radiation Dosimetry Group

Extremity and eye lens dosemeter Intercomparison IC2019$_{extEye}$

Certificate of Participation

EURADOS Intercomparison 2019 for extremity and eye lens dosemeters (IC2019$_{extEye}$)

Certificate Number:	EURADOS-2019-Sxxx/2019 for system Sxxx/2019
Number of pages:	3
Date of Issue:	February 26, 2020
Participating Institute:	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Dosimetry System:	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Reporting number:	**xx** (this anonymous number will be used in further publications)
Intercomparison procedure:	The EURADOS Intercomparison 2019 for extremity and eye lens dosemeters was managed and coordinated on behalf of EURADOS by the WG2 Intercomparison Organization Group (OG). The OG established the irradiation plan and announced the intercomparison, including the range limits of the doses and radiation qualities, in April 2019. The IC2019$_{extEye}$ on-line platform (IOP) was used by the participants for registration and for all data transfer between the participants and the OG Coordinator. Participants were required to provide details of their dosemeters (including the dosemeter reference point) on the IOP. The participants then sent their dosemeters to the Coordinator (June 2019). The Coordinator checked the correct labelling of the dosemeters and transferred all dosemeters, along with the technical details provided by the participants, to the two irradiation laboratories. The dosemeters were irradiated according to the irradiation plan and returned to the Coordinator (September and October 2019). The Coordinator then returned the dosemeters to the participants and indicated which dosemeters had not been irradiated. The participants were instructed to follow normal routine procedures as far as possible. The participants then sent the results of the dosemeter readings to the Coordinator (December 2019). After receipt of all the participants' results, the Coordinator sent the appropriate irradiation data to each participant.
Number of participants:	60 institutes from 26 countries participated in IC2019$_{extEye}$ with a total of 113 systems
Coordinator:	A.McWhan, W.Dobrzynska, S.Eliasik (Cavendish Nuclear Ltd., Berkeley ADS, Berkeley, GL13 9FB Gloucestershire,United Kingdom)
Intercomparison results:	See the table on page 2 of this certificate.
Irradiation data:	See the attached certificate of the irradiation laboratories No:DOS / 2353-xxx/19 and 2019-xxx.
Participant results:	See the table on page 2 of this certificate.

On behalf of the Intercomparison Organization Group:

Andrew McWhan

Andrew McWhan
Coordinator

On behalf of EURADOS:

Filip Vanhavere
Chairperson

European Radiation Dosimetry Group e.V., D-85764 Neuherberg Page 1

EURADOS European Radiation Dosimetry Group

Extremity and eye lens dosemeter Intercomparison IC2019$_{extreye}$

Results of the Intercomparison IC2019$_{extreye}$ (dosimetry system SXXX/2019):

EURADOS Dosemeter ID	Participant's Dosemeter ID	Radiation Quality	Quantity	Angle	Participant's Value [mSv]	Reference Value [mSv]	Response
Sxxx/2019- 8	1049542	Cs-137	Hp(0.07)	0	7.27	5.7	1.275
SXXX/2019-12	1050811	Cs-137	Hp(0.07)	0	7.28	5.7	1.277
SXXX/2019-20	1052536	Kr-85	Hp(0.07)	0	4.34	4.511	0.962
SXXX/2019-21	1052916	Kr-85	Hp(0.07)	0	4.04	4.511	0.896
SXXX/2019- 1	1042239	N-30	Hp(0.07)	60	7.1	5.6	1.268
SXXX/2019-18	1051779	N-30	Hp(0.07)	0	6.33	4.8	1.319
SXXX/2019-23	1056408	N-30	Hp(0.07)	0	5.92	4.8	1.233
SXXX/2019-26	1056529	N-30	Hp(0.07)	60	6.86	5.6	1.225
SXXX/2019- 9	1049566	Sr-90	Hp(0.07)	0	4.49	3	1.497
SXXX/2019-15	1051260	Sr-90	Hp(0.07)	45	3.97	2.8	1.418
SXXX/2019-19	1052122	Sr-90	Hp(0.07)	0	4.04	3	1.347
SXXX/2019-25	1056503	Sr-90	Hp(0.07)	45	3.98	2.8	1.421
SXXX/2019- 3	1048097	W-110	Hp(0.07)	0	5.46	4.3	1.27
SXXX/2019- 7	1049233	W-110	Hp(0.07)	0	5.74	4.3	1.335
SXXX/2019- 4	1048434	W-80	Hp(0.07)	0	7.3	4.7	1.553
SXXX/2019- 5	1048673	W-80	Hp(0.07)	0	7.31	4.7	1.555
SXXX/2019-10	1049585	W-80	Hp(0.07)	0	580.6	370	1.569
SXXX/2019-11	1049602	W-80	Hp(0.07)	0	617	370	1.668
SXXX/2019-14	1051118	W-80	Hp(0.07)	0	7.16	4.7	1.523
SXXX/2019-16	1051419	W-80	Hp(0.07)	0	7.6	4.7	1.617
SXXX/2019-31	1057004	W-80	Hp(0.07)	0	82.17	53	1.55
SXXX/2019-32	1057068	W-80	Hp(0.07)	0	81.42	53	1.536
SXXX/2019- 2	1044347	not irradiated					
SXXX/2019- 6	1049209	not irradiated					
SXXX/2019-13	1050906	not irradiated					
SXXX/2019-17	1051589	not irradiated					
SXXX/2019-28	1056726	not irradiated					

European Radiation Dosimetry Group e.V., D-85764 Neuherberg Page 2

EURADOS European Radiation Dosimetry Group

Extremity and eye lens dosemeter Intercomparison IC2019extreye

SXXX/2019-29	1056789	not irradiated
SXXX/2019-30	1056898	not irradiated
SXXX/2019-22	1056316	wrongly irradiated
SXXX/2019-24	1056431	wrongly irradiated
SXXX/2019-27	1056633	wrongly irradiated

European Radiation Dosimetry Group e.V., D-85764 Neuherberg Page 3

EURADOS European Radiation Dosimetry Group

Extremity and eye lens dosemeter Intercomparison IC2019extreye

Radiation Qualities and average photon energies or maximum beta energies:

Beta radiation:

- Kr-85: 0.69 MeV (Emax) (ISO 6980)
- Sr-90/ Y-90: 2.3 MeV (Emax) (ISO 6980)

Gamma Radiation & X-rays:

- N-30 25 keV (ISO 4037)
- W-80 57 keV (80 kV) (ISO 4037)
- W-110 79 keV (ISO 4037)
- S-Cs: 662 keV (ISO 4037)

European Radiation Dosimetry Group e.V., D-85764 Neuherberg Page 4

Appendix F: Datasheets with results for individual participants

In this annex all individual results are given for all participating systems, identified by their reporting number (see section2.4), for the dose quantity $H_p(0.07)$ and $H_p(3)$. Since some systems were not designed to measure $H_p(0.07)$ these systems are missing in this part of the annex.

For the non-irradiated and wrongly irradiated dosemeters the following terms were used:

NIR not irradiated dosemeter (available for background and transport dose correction by the monitoring service)

WIR wrongly irradiated dosemeter (wrongly irradiated by the irradiation laboratory).

These results were not included in the data sheets.

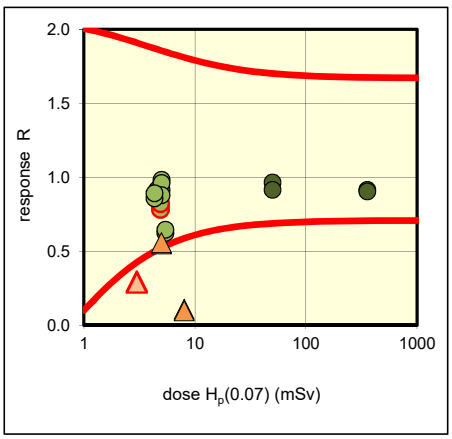
Reporting number 1: Extremity - photon dosemeter

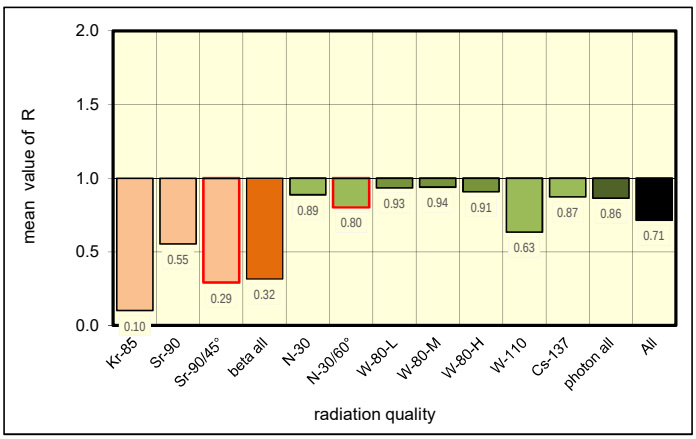
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	12	8.00	0.86	0.11	(outlier)
		13	8.00	0.77	0.10	(outlier)
	Sr-90	21	5.02	2.75	0.55	(OK)
		28	5.02	2.80	0.56	(OK)
	Sr-90/45°	15	3.00	0.89	0.30	(outlier)
		17	3.00	0.86	0.29	(outlier)
photon	**N-30**	18	4.60	4.21	**0.92**	OK
		19	4.60	3.95	**0.86**	OK
	N-30/60°	24	4.90	3.83	**0.78**	OK
		26	4.90	4.02	**0.82**	OK
	W-80-L	14	5.00	4.57	**0.91**	OK
		16	5.00	4.91	**0.98**	OK
		29	5.00	4.80	**0.96**	OK
		31	5.00	4.39	**0.88**	OK
	W-80-M	6	50.0	48.22	**0.96**	OK
		7	50.0	45.70	**0.91**	OK
	W-80-H	1	358	327.15	**0.91**	OK
		2	358	323.24	**0.90**	OK
	W-110	4	5.40	3.36	**0.62**	OK
		5	5.40	3.48	**0.64**	OK
	Cs-137	9	4.30	3.68	**0.86**	OK
		10	4.30	3.83	**0.89**	OK
	NIR	3				**Legend for Quality**
	NIR	8				L ..... low dose
	NIR	11				M ..... medium dose
	NIR	20				H ..... high dose
	NIR	22				NIR ..... not irradiated
	NIR	23				WIR .... wrongly irradiated
	NIR	25				
	NIR	27				
	NIR	32				
	WIR	30				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.10	0.10	0.11	0.10	8%	-
Sr-90	2	0.55	0.55	0.56	0.55	1%	Sr-90: 45°/0°
Sr-90/45°	2	0.29	0.29	0.30	0.29	2%	0.53
beta all	6	0.29	0.32	0.56	0.10	64%	-
N-30	2	0.89	0.89	0.92	0.86	5%	**N-30: 60°/0°**
N-30/60°	2	0.80	0.80	0.82	0.78	3%	0.90
W-80-L	4	0.94	0.93	0.98	0.88	5%	**W-80: H/L**
W-80-M	2	0.94	0.94	0.96	0.91	4%	0.97
W-80-H	2	0.91	0.91	0.91	0.90	1%	
W-110	2	0.63	0.63	0.64	0.62	2%	-
Cs-137	2	0.87	0.87	0.89	0.86	3%	-
photon all	**16**	**0.90**	**0.86**	**0.98**	**0.62**	**12%**	**-**
All	22	0.86	0.71	0.98	0.10	40%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

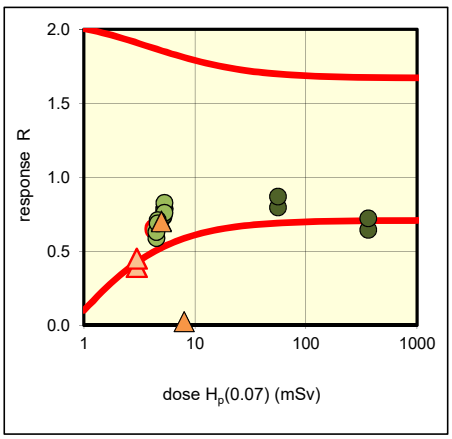
Reporting number 2 : Extremity - photon dosemeter

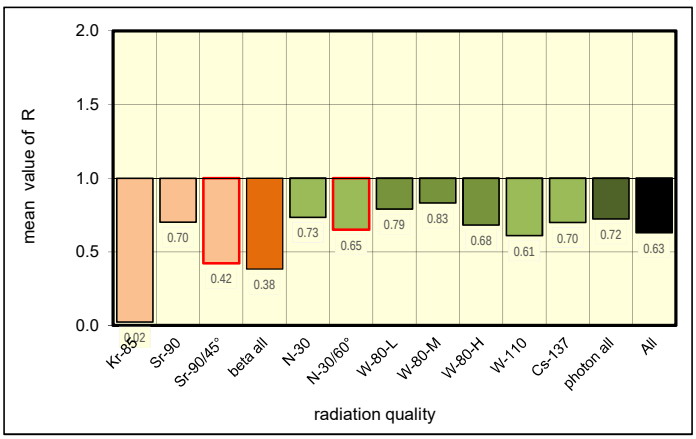
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	9	8.00	0.19	0.02	(outlier)
		23	8.00	0.19	0.02	(outlier)
	Sr-90	7	5.02	3.54	0.71	(OK)
		31	5.02	3.50	0.70	(OK)
	Sr-90/45°	5	3.00	1.18	0.39	(outlier)
		8	3.00	1.35	0.45	(OK)
photon	N-30	16	5.20	3.80	**0.73**	OK
		17	5.20	3.83	**0.74**	OK
	N-30/60°	11	4.30	2.82	**0.66**	OK
		12	4.30	2.77	**0.64**	OK
	W-80-L	6	5.30	4.18	**0.79**	OK
		10	5.30	4.16	**0.78**	OK
		22	5.30	4.38	**0.83**	OK
		24	5.30	4.02	**0.76**	OK
	W-80-M	28	56.0	44.57	**0.80**	OK
		29	56.0	48.64	**0.87**	OK
	W-80-H	2	366	235.25	**0.64**	outlier
		3	366	263.82	**0.72**	OK
	W-110	14	4.50	2.65	**0.59**	OK
		15	4.50	2.83	**0.63**	OK
	Cs-137	26	4.60	3.26	**0.71**	OK
		27	4.60	3.17	**0.69**	OK
	NIR	1				**Legend for Quality**
	NIR	4				L ..... low dose
	NIR	13				M ..... medium dose
	NIR	18				H ..... high dose
	NIR	19				NIR ..... not irradiated
	NIR	20				WIR .... wrongly irradiated
	NIR	21				
	NIR	25				
	NIR	30				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.02	0.02	0.02	0.02	0%	-
Sr-90	2	0.70	0.70	0.71	0.70	1%	Sr-90: 45°/0°
Sr-90/45°	2	0.42	0.42	0.45	0.39	10%	0.60
beta all	6	0.42	0.38	0.71	0.02	80%	-
N-30	2	0.73	0.73	0.74	0.73	1%	**N-30: 60°/0°**
N-30/60°	2	0.65	0.65	0.66	0.64	1%	0.89
W-80-L	4	0.79	0.79	0.83	0.76	4%	**W-80: H/L**
W-80-M	2	0.83	0.83	0.87	0.80	6%	0.86
W-80-H	2	0.68	0.68	0.72	0.64	8%	
W-110	2	0.61	0.61	0.63	0.59	5%	-
Cs-137	2	0.70	0.70	0.71	0.69	2%	-
photon all	**16**	**0.73**	**0.72**	**0.87**	**0.59**	**11%**	**-**
All	22	0.70	0.63	0.87	0.02	36%	-

outliers: 1 of 16 **fraction of outliers: 6%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

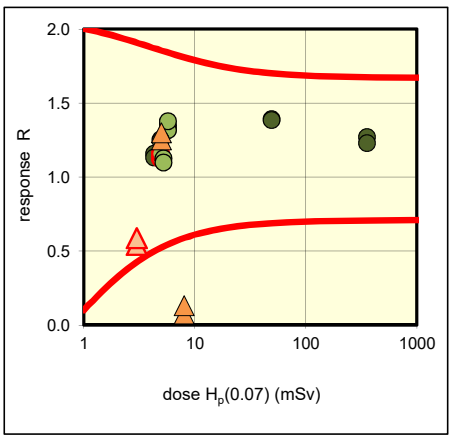
Reporting number 3 : Extremity - photon dosemeter

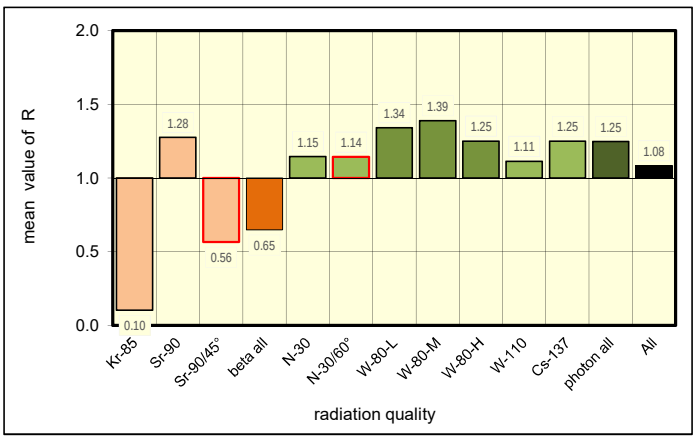
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	14	8.00	0.60	0.08	(outlier)
		18	8.00	1.04	0.13	(outlier)
	Sr-90	17	5.02	6.28	1.25	(OK)
		28	5.02	6.52	1.30	(OK)
	Sr-90/45°	6	3.00	1.62	0.54	(OK)
		13	3.00	1.76	0.59	(OK)
photon	N-30	31	4.30	4.98	**1.16**	OK
		32	4.30	4.87	**1.13**	OK
	N-30/60°	23	4.90	5.52	**1.13**	OK
		30	4.90	5.68	**1.16**	OK
	W-80-L	15	5.70	7.55	**1.32**	OK
		16	5.70	7.69	**1.35**	OK
		26	5.70	7.51	**1.32**	OK
		27	5.70	7.85	**1.38**	OK
	W-80-M	8	49.0	68.17	**1.39**	OK
		21	49.0	67.92	**1.39**	OK
	W-80-H	11	355	451.27	**1.27**	OK
		12	355	436.79	**1.23**	OK
	W-110	9	5.20	5.87	**1.13**	OK
		10	5.20	5.72	**1.10**	OK
	Cs-137	3	4.90	6.15	**1.25**	OK
		4	4.90	6.11	**1.25**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ..... low dose
	NIR	5				M ..... medium dose
	NIR	7				H ..... high dose
	NIR	19				NIR ..... not irradiated
	NIR	20				WIR .... wrongly irradiated
	NIR	22				
	NIR	24				
	NIR	25				
	NIR	29				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.10	0.10	0.13	0.08	38%	-
Sr-90	2	1.28	1.28	1.30	1.25	3%	Sr-90: 45°/0°
Sr-90/45°	2	0.56	0.56	0.59	0.54	6%	0.44
beta all	6	0.56	0.65	1.30	0.08	82%	-
N-30	2	1.15	1.15	1.16	1.13	2%	**N-30: 60°/0°**
N-30/60°	2	1.14	1.14	1.16	1.13	2%	1.00
W-80-L	4	1.34	1.34	1.38	1.32	2%	**W-80: H/L**
W-80-M	2	1.39	1.39	1.39	1.39	0%	0.93
W-80-H	2	1.25	1.25	1.27	1.23	2%	
W-110	2	1.11	1.11	1.13	1.10	2%	-
Cs-137	2	1.25	1.25	1.25	1.25	0%	-
photon all	**16**	**1.25**	**1.25**	**1.39**	**1.10**	**8%**	**-**
All	22	1.24	1.08	1.39	0.08	36%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

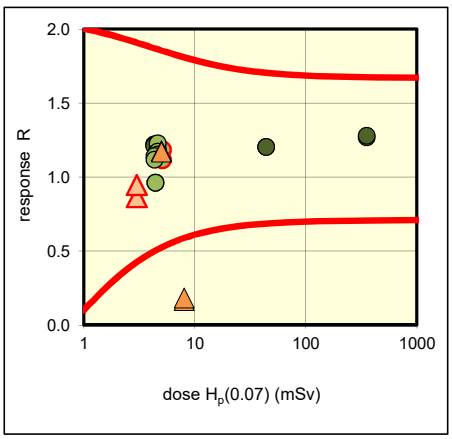
Reporting number 4 : Extremity - photon dosemeter

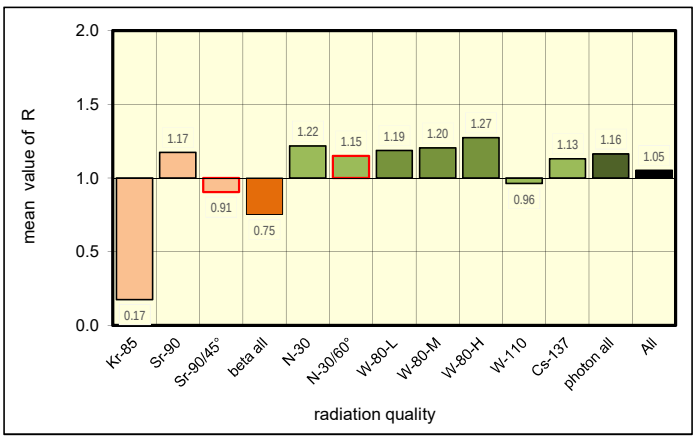
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	24	8.00	1.33	0.17	(outlier)
		32	8.00	1.47	0.18	(outlier)
	Sr-90	21	5.02	5.91	1.18	(OK)
		23	5.02	5.87	1.17	(OK)
	Sr-90/45°	17	3.00	2.59	0.86	(OK)
		22	3.00	2.84	0.95	(OK)
photon	N-30	28	4.30	5.25	**1.22**	OK
		29	4.30	5.22	**1.21**	OK
	N-30/60°	14	5.10	6.04	**1.18**	OK
		15	5.10	5.69	**1.12**	OK
	W-80-L	19	4.60	5.48	**1.19**	OK
		20	4.60	5.66	**1.23**	OK
		26	4.60	5.39	**1.17**	OK
		27	4.60	5.31	**1.15**	OK
	W-80-M	1	44.0	52.98	**1.20**	OK
		2	44.0	52.94	**1.20**	OK
	W-80-H	3	354	449.10	**1.27**	OK
		4	354	452.70	**1.28**	OK
	W-110	16	4.40	4.24	**0.96**	OK
		18	4.40	4.24	**0.96**	OK
	Cs-137	10	4.30	4.91	**1.14**	OK
		12	4.30	4.81	**1.12**	OK
	NIR	5				**Legend for Quality**
	NIR	6				L ..... low dose
	NIR	7				M ..... medium dose
	NIR	8				H ..... high dose
	NIR	9				NIR ..... not irradiated
	NIR	11				WIR .... wrongly irradiated
	NIR	13				
	NIR	25				
	NIR	30				
	NIR	31				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.17	0.17	0.18	0.17	7%	-
Sr-90	2	1.17	1.17	1.18	1.17	1%	Sr-90: 45°/0°
Sr-90/45°	2	0.91	0.91	0.95	0.86	6%	0.77
beta all	6	0.91	0.75	1.18	0.17	62%	-
N-30	2	1.22	1.22	1.22	1.21	0%	**N-30: 60°/0°**
N-30/60°	2	1.15	1.15	1.18	1.12	4%	0.95
W-80-L	4	1.18	1.19	1.23	1.15	3%	**W-80: H/L**
W-80-M	2	1.20	1.20	1.20	1.20	0%	1.07
W-80-H	2	1.27	1.27	1.28	1.27	1%	
W-110	2	0.96	0.96	0.96	0.96	0%	-
Cs-137	2	1.13	1.13	1.14	1.12	1%	-
photon all	**16**	**1.19**	**1.16**	**1.28**	**0.96**	**8%**	**-**
All	22	1.17	1.05	1.28	0.17	29%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

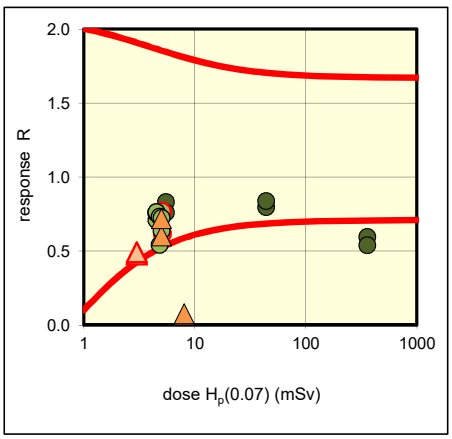
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

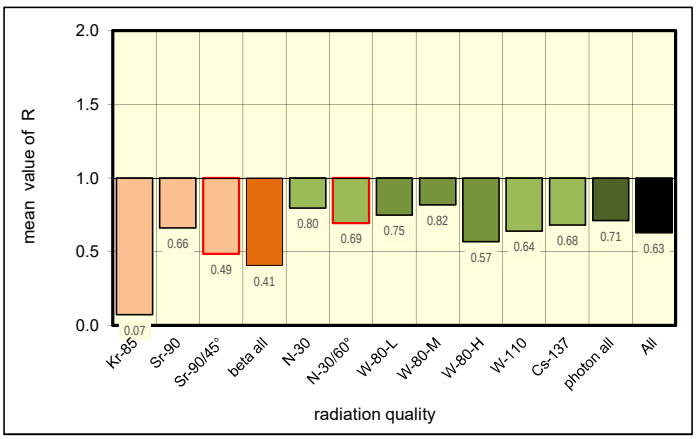
Reporting number 5 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	23	8.00	0.54	**0.07**	outlier
		27	8.00	0.61	**0.08**	outlier
	Sr-90	24	5.02	3.03	**0.60**	OK
		29	5.02	3.61	**0.72**	OK
	Sr-90/45°	1	3.00	1.43	**0.48**	OK
		11	3.00	1.48	**0.49**	OK
photon	N-30	19	5.50	4.57	**0.83**	OK
		20	5.50	4.18	**0.76**	OK
	N-30/60°	31	5.10	3.15	**0.62**	OK
		32	5.10	3.92	**0.77**	OK
	W-80-L	5	4.50	3.19	**0.71**	OK
		6	4.50	3.40	**0.76**	OK
		9	4.50	3.44	**0.76**	OK
		10	4.50	3.44	**0.76**	OK
	W-80-M	3	44.0	35.05	**0.80**	OK
		4	44.0	36.86	**0.84**	OK
	W-80-H	18	357	212.63	**0.60**	outlier
		22	357	192.39	**0.54**	outlier
	W-110	7	4.80	2.61	**0.54**	OK
		8	4.80	3.52	**0.73**	OK
	Cs-137	16	5.00	3.19	**0.64**	OK
		17	5.00	3.62	**0.72**	OK
	NIR	2				**Legend for Quality**
	NIR	12				L ..... low dose
	NIR	13				M ..... medium dose
	NIR	14				H ..... high dose
	NIR	15				NIR ..... not irradiated
	NIR	21				WIR .... wrongly irradiated
	NIR	25				
	NIR	26				
	NIR	28				
	NIR	30				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.07	0.07	0.08	0.07	9%	-
Sr-90	2	0.66	0.66	0.72	0.60	12%	Sr-90: 45°/0°
Sr-90/45°	2	0.49	0.49	0.49	0.48	2%	0.73
beta all	**6**	**0.49**	**0.41**	**0.72**	**0.07**	**67%**	**-**
N-30	2	0.80	0.80	0.83	0.76	6%	N-30: 60°/0°
N-30/60°	2	0.69	0.69	0.77	0.62	15%	0.87
W-80-L	4	0.76	0.75	0.76	0.71	4%	W-80: H/L
W-80-M	2	0.82	0.82	0.84	0.80	4%	0.76
W-80-H	2	0.57	0.57	0.60	0.54	7%	
W-110	2	0.64	0.64	0.73	0.54	21%	-
Cs-137	2	0.68	0.68	0.72	0.64	9%	-
photon all	**16**	**0.74**	**0.71**	**0.84**	**0.54**	**13%**	**-**
All	**22**	**0.71**	**0.63**	**0.84**	**0.07**	**33%**	**-**

outliers: 4 of 22 **fraction of outliers: 18%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

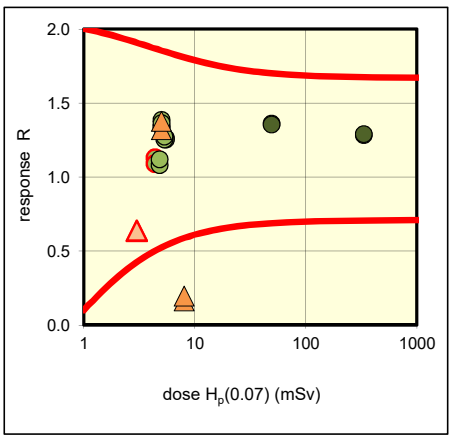
Reporting number 6 : Extremity - photon dosemeter

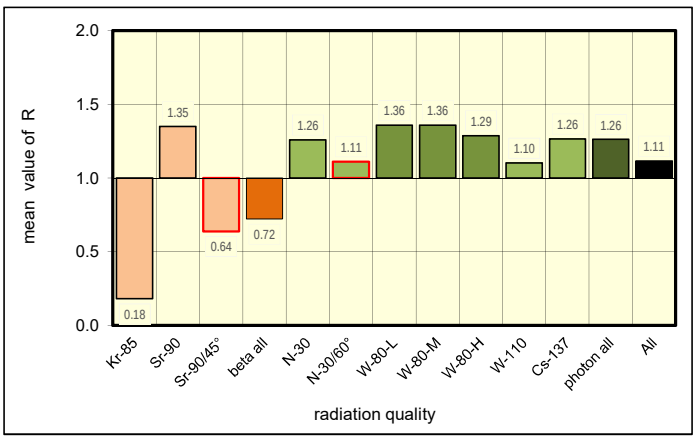
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	2	8.00	1.31	0.16	(outlier)
		16	8.00	1.56	0.20	(outlier)
	Sr-90	14	5.02	6.64	1.32	(OK)
		22	5.02	6.91	1.38	(OK)
	Sr-90/45°	25	3.00	1.91	0.64	(OK)
		31	3.00	1.92	0.64	(OK)
photon	N-30	27	5.50	6.95	**1.26**	OK
		28	5.50	6.90	**1.25**	OK
	N-30/60°	11	4.40	4.97	**1.13**	OK
		12	4.40	4.80	**1.09**	OK
	W-80-L	10	5.00	6.72	**1.34**	OK
		13	5.00	6.68	**1.34**	OK
		29	5.00	6.94	**1.39**	OK
		30	5.00	6.82	**1.36**	OK
	W-80-M	18	49.0	66.77	**1.36**	OK
		19	49.0	66.42	**1.36**	OK
	W-80-H	17	332	426.20	**1.28**	OK
		21	332	428.22	**1.29**	OK
	W-110	6	4.80	5.19	**1.08**	OK
		8	4.80	5.38	**1.12**	OK
	Cs-137	4	5.30	6.65	**1.25**	OK
		5	5.30	6.76	**1.27**	OK
	NIR	1				**Legend for Quality**
	NIR	3				L ……. low dose
	NIR	7				M …… medium dose
	NIR	9				H ……. high dose
	NIR	15				NIR ….. not irradiated
	NIR	20				WIR …. wrongly irradiated
	NIR	23				
	NIR	24				
	NIR	26				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.18	0.18	0.20	0.16	13%	-
Sr-90	2	1.35	1.35	1.38	1.32	3%	Sr-90: 45°/0°
Sr-90/45°	2	0.64	0.64	0.64	0.64	0%	0.47
beta all	6	0.64	0.72	1.38	0.16	73%	-
N-30	2	1.26	1.26	1.26	1.25	1%	**N-30: 60°/0°**
N-30/60°	2	1.11	1.11	1.13	1.09	3%	0.88
W-80-L	4	1.35	1.36	1.39	1.34	2%	**W-80: H/L**
W-80-M	2	1.36	1.36	1.36	1.36	0%	0.95
W-80-H	2	1.29	1.29	1.29	1.28	0%	
W-110	2	1.10	1.10	1.12	1.08	3%	-
Cs-137	2	1.26	1.26	1.27	1.25	1%	-
photon all	**16**	**1.28**	**1.26**	**1.39**	**1.08**	**8%**	**-**
All	22	1.27	1.11	1.39	0.16	33%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

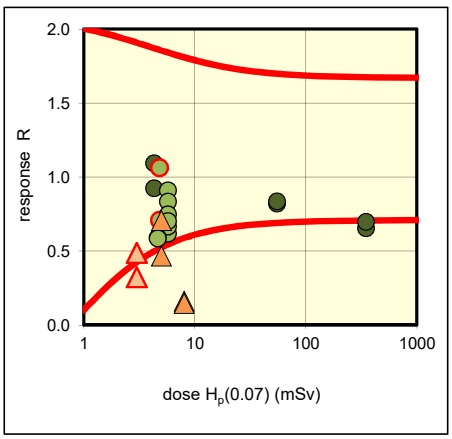
Reporting number 7 : Extremity - photon dosemeter

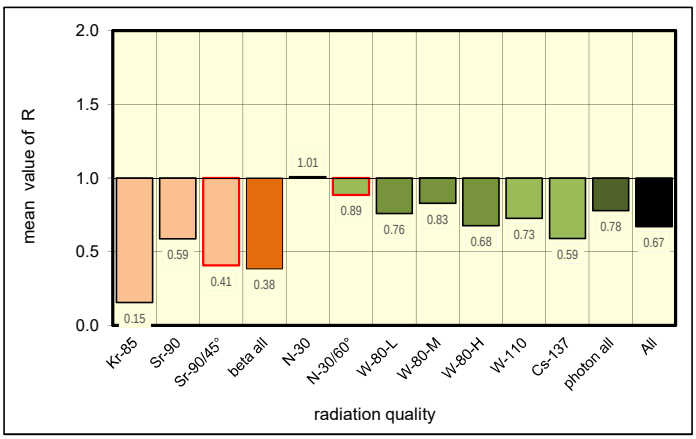
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	8	8.00	1.29	0.16	(outlier)
		21	8.00	1.17	0.15	(outlier)
	Sr-90	3	5.02	3.55	0.71	(OK)
		27	5.02	2.34	0.47	(outlier)
	Sr-90/45°	19	3.00	1.46	0.49	(OK)
		32	3.00	0.97	0.32	(outlier)
photon	N-30	22	4.30	4.70	**1.09**	OK
		24	4.30	3.98	**0.92**	OK
	N-30/60°	20	4.80	5.10	**1.06**	OK
		30	4.80	3.40	**0.71**	OK
	W-80-L	9	5.70	5.19	**0.91**	OK
		10	5.70	4.76	**0.84**	OK
		29	5.70	3.53	**0.62**	OK
		31	5.70	3.79	**0.67**	OK
	W-80-M	11	55.0	45.10	**0.82**	OK
		12	55.0	46.00	**0.84**	OK
	W-80-H	26	349	228.39	**0.65**	outlier
		28	349	243.84	**0.70**	outlier
	W-110	1	5.70	4.26	**0.75**	OK
		2	5.70	4.00	**0.70**	OK
	Cs-137	13	4.60	2.73	**0.59**	OK
		14	4.60	2.70	**0.59**	OK
	NIR	4				**Legend for Quality**
	NIR	5				L ..... low dose
	NIR	6				M ..... medium dose
	NIR	7				H ..... high dose
	NIR	17				NIR ..... not irradiated
	NIR	18				WIR .... wrongly irradiated
	NIR	23				
	NIR	25				
	WIR	15				
	WIR	16				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.15	0.15	0.16	0.15	7%	-
Sr-90	2	0.59	0.59	0.71	0.47	29%	Sr-90: 45°/0°
Sr-90/45°	2	0.41	0.41	0.49	0.32	29%	0.69
beta all	6	0.40	0.38	0.71	0.15	56%	-
N-30	2	1.01	1.01	1.09	0.92	12%	**N-30: 60°/0°**
N-30/60°	2	0.89	0.89	1.06	0.71	28%	0.88
W-80-L	4	0.75	0.76	0.91	0.62	18%	**W-80: H/L**
W-80-M	2	0.83	0.83	0.84	0.82	1%	0.89
W-80-H	2	0.68	0.68	0.70	0.65	5%	
W-110	2	0.73	0.73	0.75	0.70	4%	-
Cs-137	2	0.59	0.59	0.59	0.59	1%	-
photon all	**16**	**0.73**	**0.78**	**1.09**	**0.59**	**20%**	**-**
All	22	0.70	0.67	1.09	0.15	37%	-

outliers: 2 of 16 **fraction of outliers: 13%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

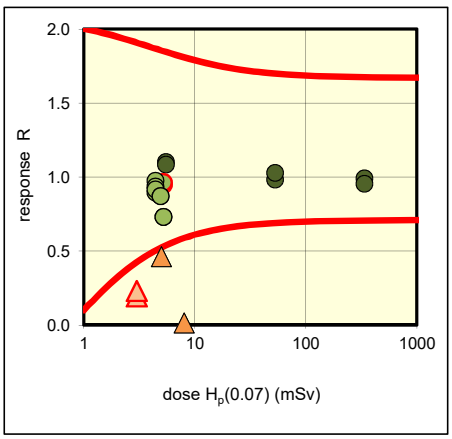
Reporting number 8 : Extremity - photon dosemeter

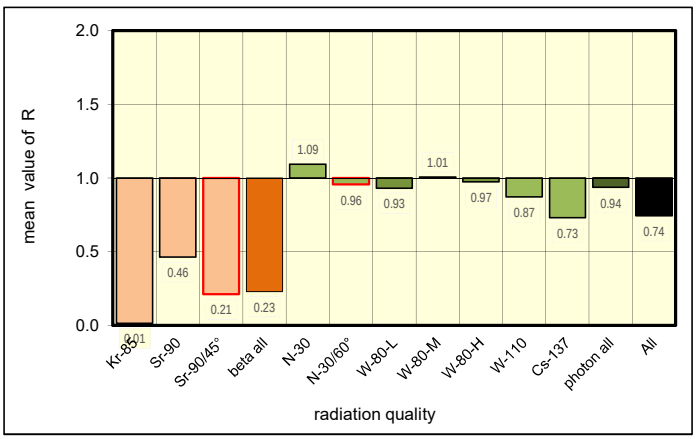
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	13	8.00	0.11	0.01	(outlier)
		27	8.00	0.11	0.01	(outlier)
	Sr-90	5	5.02	2.32	0.46	(outlier)
		31	5.02	2.32	0.46	(outlier)
	Sr-90/45°	16	3.00	0.58	0.19	(outlier)
		30	3.00	0.69	0.23	(outlier)
photon	N-30	19	5.50	6.06	**1.10**	OK
		20	5.50	5.97	**1.09**	OK
	N-30/60°	15	5.20	4.93	**0.95**	OK
		17	5.20	5.01	**0.96**	OK
	W-80-L	1	4.40	3.94	**0.90**	OK
		2	4.40	4.29	**0.98**	OK
		29	4.40	4.12	**0.94**	OK
		32	4.40	4.04	**0.92**	OK
	W-80-M	4	53.0	52.08	**0.98**	OK
		6	53.0	54.52	**1.03**	OK
	W-80-H	25	338	335.17	**0.99**	OK
		26	338	322.82	**0.96**	OK
	W-110	10	4.90	4.27	**0.87**	OK
		12	4.90	4.27	**0.87**	OK
	Cs-137	7	5.20	3.80	**0.73**	OK
		9	5.20	3.80	**0.73**	OK
	NIR	3				**Legend for Quality**
	NIR	8				L ..... low dose
	NIR	11				M ..... medium dose
	NIR	14				H ..... high dose
	NIR	18				NIR ..... not irradiated
	NIR	21				WIR .... wrongly irradiated
	NIR	22				
	NIR	23				
	NIR	24				
	NIR	28				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.01	0.01	0.01	0.01	0%	-
Sr-90	2	0.46	0.46	0.46	0.46	0%	Sr-90: 45°/0°
Sr-90/45°	2	0.21	0.21	0.23	0.19	12%	0.46
beta all	6	0.21	0.23	0.46	0.01	88%	-
N-30	2	1.09	1.09	1.10	1.09	1%	**N-30: 60°/0°**
N-30/60°	2	0.96	0.96	0.96	0.95	1%	0.87
W-80-L	4	0.93	0.93	0.98	0.90	4%	**W-80: H/L**
W-80-M	2	1.01	1.01	1.03	0.98	3%	1.05
W-80-H	2	0.97	0.97	0.99	0.96	3%	
W-110	2	0.87	0.87	0.87	0.87	0%	-
Cs-137	2	0.73	0.73	0.73	0.73	0%	-
photon all	**16**	**0.95**	**0.94**	**1.10**	**0.73**	**11%**	**-**
All	22	0.91	0.74	1.10	0.01	47%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

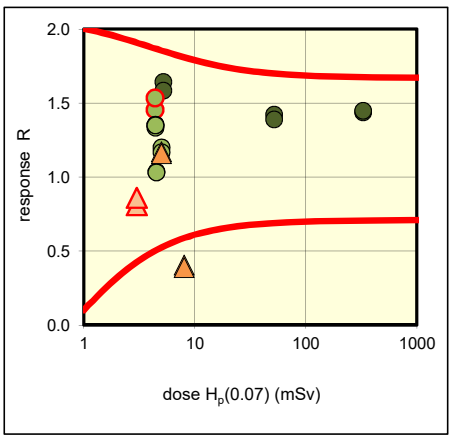
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

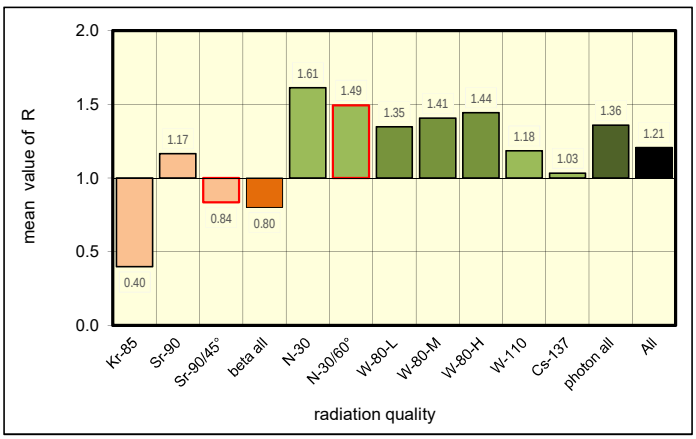
Reporting number 9 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	30	8.00	3.24	**0.41**	outlier
		31	8.00	3.11	**0.39**	outlier
	Sr-90	16	5.02	5.88	**1.17**	OK
		20	5.02	5.82	**1.16**	OK
	Sr-90/45°	15	3.00	2.43	**0.81**	OK
		21	3.00	2.58	**0.86**	OK
photon	N-30	11	5.20	8.54	**1.64**	OK
		12	5.20	8.24	**1.58**	OK
	N-30/60°	22	4.40	6.40	**1.45**	OK
		23	4.40	6.75	**1.53**	OK
	W-80-L	3	4.40	5.87	**1.33**	OK
		5	4.40	5.95	**1.35**	OK
		26	4.40	5.96	**1.35**	OK
		27	4.40	5.94	**1.35**	OK
	W-80-M	4	52.0	73.95	**1.42**	OK
		8	52.0	72.29	**1.39**	OK
	W-80-H	17	329	473.13	**1.44**	OK
		18	329	476.84	**1.45**	OK
	W-110	1	5.00	6.00	**1.20**	OK
		2	5.00	5.84	**1.17**	OK
	Cs-137	9	4.50	4.66	**1.04**	OK
		10	4.50	4.64	**1.03**	OK
	NIR	6				**Legend for Quality**
	NIR	7				L ..... low dose
	NIR	13				M ..... medium dose
	NIR	14				H ..... high dose
	NIR	19				NIR ..... not irradiated
	NIR	24				WIR .... wrongly irradiated
	NIR	25				
	NIR	28				
	NIR	29				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.40	0.40	0.41	0.39	3%	-
Sr-90	2	1.17	1.17	1.17	1.16	1%	Sr-90: 45°/0°
Sr-90/45°	2	0.84	0.84	0.86	0.81	4%	0.72
beta all	**6**	**0.84**	**0.80**	**1.17**	**0.39**	**43%**	**-**
N-30	2	1.61	1.61	1.64	1.58	3%	N-30: 60°/0°
N-30/60°	2	1.49	1.49	1.53	1.45	4%	0.93
W-80-L	4	1.35	1.35	1.35	1.33	1%	W-80: H/L
W-80-M	2	1.41	1.41	1.42	1.39	2%	1.07
W-80-H	2	1.44	1.44	1.45	1.44	1%	
W-110	2	1.18	1.18	1.20	1.17	2%	-
Cs-137	2	1.03	1.03	1.04	1.03	0%	-
photon all	**16**	**1.37**	**1.36**	**1.64**	**1.03**	**13%**	**-**
All	**22**	**1.34**	**1.21**	**1.64**	**0.39**	**28%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

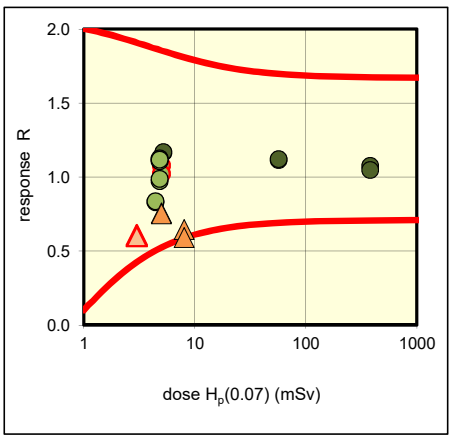
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

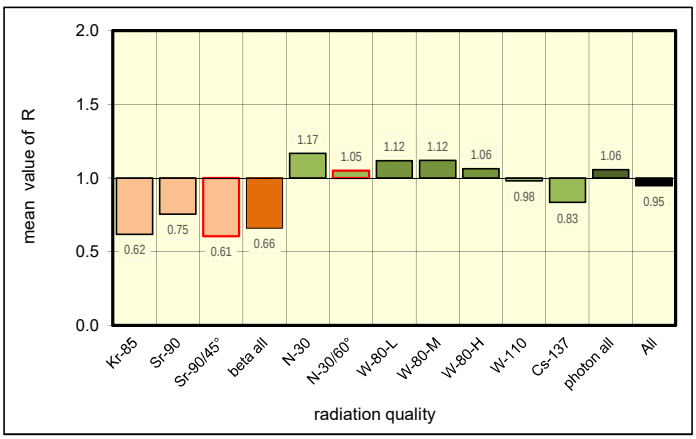
Reporting number 10 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	5	8.00	5.16	**0.65**	OK
		15	8.00	4.73	**0.59**	OK
	Sr-90	24	5.02	3.81	**0.76**	OK
		30	5.02	3.77	**0.75**	OK
	Sr-90/45°	10	3.00	1.83	**0.61**	OK
		17	3.00	1.80	**0.60**	OK
photon	N-30	25	5.20	6.06	**1.17**	OK
		26	5.20	6.08	**1.17**	OK
	N-30/60°	31	5.00	5.39	**1.08**	OK
		32	5.00	5.11	**1.02**	OK
	W-80-L	6	4.80	5.41	**1.13**	OK
		7	4.80	5.37	**1.12**	OK
		11	4.80	5.32	**1.11**	OK
		12	4.80	5.37	**1.12**	OK
	W-80-M	8	57.0	63.63	**1.12**	OK
		9	57.0	63.89	**1.12**	OK
	W-80-H	21	380	408.94	**1.08**	OK
		22	380	398.57	**1.05**	OK
	W-110	1	4.80	4.67	**0.97**	OK
		2	4.80	4.75	**0.99**	OK
	Cs-137	13	4.40	3.66	**0.83**	OK
		14	4.40	3.68	**0.84**	OK
	NIR	3				**Legend for Quality**
	NIR	4				L ……. low dose
	NIR	16				M …… medium dose
	NIR	18				H ……. high dose
	NIR	19				NIR ….. not irradiated
	NIR	20				WIR …. wrongly irradiated
	NIR	23				
	NIR	27				
	NIR	28				
	NIR	29				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.62	0.62	0.65	0.59	6%	-
Sr-90	2	0.75	0.75	0.76	0.75	1%	Sr-90: 45°/0°
Sr-90/45°	2	0.61	0.61	0.61	0.60	1%	0.80
beta all	**6**	**0.63**	**0.66**	**0.76**	**0.59**	**12%**	**-**
N-30	2	1.17	1.17	1.17	1.17	0%	N-30: 60°/0°
N-30/60°	2	1.05	1.05	1.08	1.02	4%	0.90
W-80-L	4	1.12	1.12	1.13	1.11	1%	W-80: H/L
W-80-M	2	1.12	1.12	1.12	1.12	0%	0.95
W-80-H	2	1.06	1.06	1.08	1.05	2%	
W-110	2	0.98	0.98	0.99	0.97	1%	-
Cs-137	2	0.83	0.83	0.84	0.83	0%	-
photon all	**16**	**1.09**	**1.06**	**1.17**	**0.83**	**10%**	**-**
All	**22**	**1.04**	**0.95**	**1.17**	**0.59**	**22%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

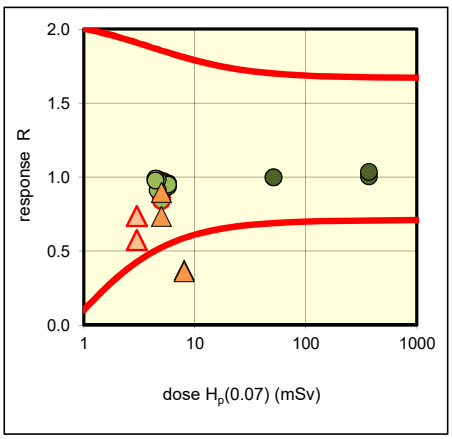
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

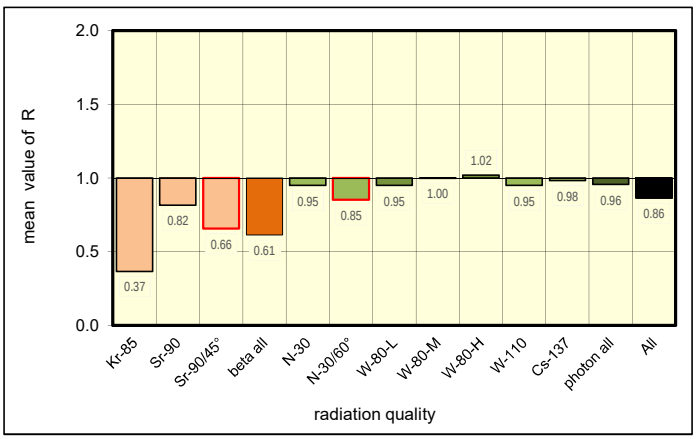
Reporting number 11 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	12	8.00	2.97	**0.37**	outlier
		19	8.00	2.88	**0.36**	outlier
	Sr-90	8	5.02	3.69	**0.74**	OK
		9	5.02	4.50	**0.90**	OK
	Sr-90/45°	15	3.00	2.21	**0.74**	OK
		23	3.00	1.72	**0.57**	OK
photon	N-30	16	5.20	4.82	**0.93**	OK
		17	5.20	5.06	**0.97**	OK
	N-30/60°	20	5.00	4.32	**0.86**	OK
		22	5.00	4.21	**0.84**	OK
	W-80-L	2	5.70	5.47	**0.96**	OK
		7	5.70	5.34	**0.94**	OK
		29	5.70	5.43	**0.95**	OK
		30	5.70	5.41	**0.95**	OK
	W-80-M	31	51.0	50.97	**1.00**	OK
		32	51.0	50.96	**1.00**	OK
	W-80-H	13	371	372.53	**1.00**	OK
		14	371	384.46	**1.04**	OK
	W-110	4	4.60	4.19	**0.91**	OK
		5	4.60	4.54	**0.99**	OK
	Cs-137	25	4.40	4.36	**0.99**	OK
		26	4.40	4.30	**0.98**	OK
	NIR	1				**Legend for Quality**
	NIR	3				L ..... low dose
	NIR	6				M ..... medium dose
	NIR	10				H ..... high dose
	NIR	11				NIR ..... not irradiated
	NIR	18				WIR .... wrongly irradiated
	NIR	21				
	NIR	24				
	NIR	27				
	NIR	28				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.37	0.37	0.37	0.36	2%	-
Sr-90	2	0.82	0.82	0.90	0.74	14%	Sr-90: 45°/0°
Sr-90/45°	2	0.66	0.66	0.74	0.57	17%	0.80
beta all	**6**	**0.65**	**0.61**	**0.90**	**0.36**	**35%**	**-**
N-30	2	0.95	0.95	0.97	0.93	3%	N-30: 60°/0°
N-30/60°	2	0.85	0.85	0.86	0.84	2%	0.90
W-80-L	4	0.95	0.95	0.96	0.94	1%	W-80: H/L
W-80-M	2	1.00	1.00	1.00	1.00	0%	1.07
W-80-H	2	1.02	1.02	1.04	1.00	2%	
W-110	2	0.95	0.95	0.99	0.91	6%	-
Cs-137	2	0.98	0.98	0.99	0.98	1%	-
photon all	**16**	**0.97**	**0.96**	**1.04**	**0.84**	**5%**	**-**
All	**22**	**0.94**	**0.86**	**1.04**	**0.36**	**23%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

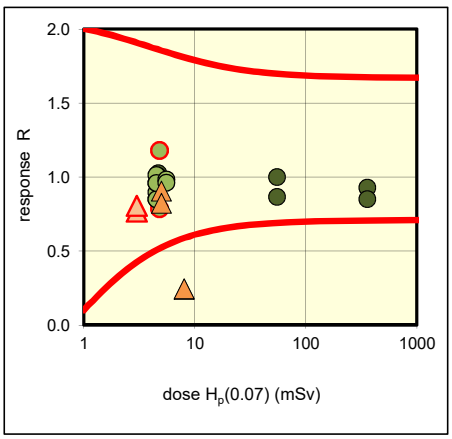
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

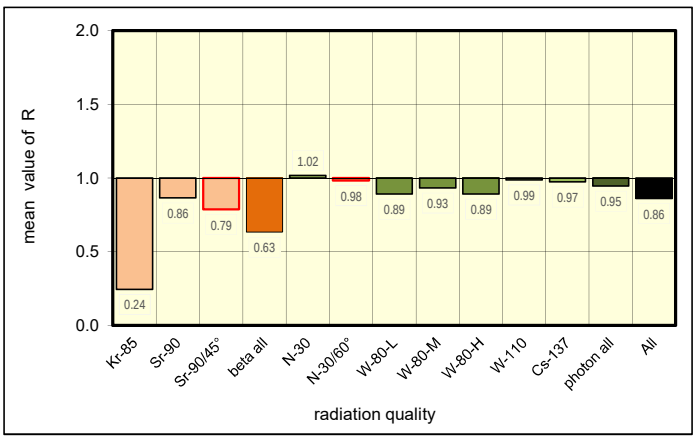
Reporting number 12 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	26	8.00	1.94	**0.24**	outlier
		28	8.00	1.97	**0.25**	outlier
	Sr-90	13	5.02	4.55	**0.91**	OK
		32	5.02	4.13	**0.82**	OK
	Sr-90/45°	23	3.00	2.30	**0.77**	OK
		31	3.00	2.42	**0.81**	OK
photon	N-30	20	4.70	4.83	**1.03**	OK
		21	4.70	4.73	**1.01**	OK
	N-30/60°	6	4.80	5.66	**1.18**	OK
		8	4.80	3.78	**0.79**	OK
	W-80-L	5	4.50	3.84	**0.85**	OK
		7	4.50	4.04	**0.90**	OK
		27	4.50	4.32	**0.96**	OK
		30	4.50	3.83	**0.85**	OK
	W-80-M	16	55.0	47.67	**0.87**	OK
		18	55.0	54.98	**1.00**	OK
	W-80-H	15	357	332.02	**0.93**	OK
		17	357	304.00	**0.85**	OK
	W-110	2	4.50	4.57	**1.02**	OK
		3	4.50	4.32	**0.96**	OK
	Cs-137	9	5.50	5.41	**0.98**	OK
		10	5.50	5.30	**0.96**	OK
	NIR	1				**Legend for Quality**
	NIR	4				L ..... low dose
	NIR	11				M ..... medium dose
	NIR	12				H ..... high dose
	NIR	14				NIR ..... not irradiated
	NIR	19				WIR .... wrongly irradiated
	NIR	22				
	NIR	24				
	NIR	25				
	NIR	29				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.24	0.24	0.25	0.24	1%	-
Sr-90	2	0.86	0.86	0.91	0.82	7%	Sr-90: 45°/0°
Sr-90/45°	2	0.79	0.79	0.81	0.77	4%	0.91
beta all	**6**	**0.79**	**0.63**	**0.91**	**0.24**	**48%**	**-**
N-30	2	1.02	1.02	1.03	1.01	1%	N-30: 60°/0°
N-30/60°	2	0.98	0.98	1.18	0.79	28%	0.97
W-80-L	4	0.88	0.89	0.96	0.85	6%	W-80: H/L
W-80-M	2	0.93	0.93	1.00	0.87	10%	1.00
W-80-H	2	0.89	0.89	0.93	0.85	6%	
W-110	2	0.99	0.99	1.02	0.96	4%	-
Cs-137	2	0.97	0.97	0.98	0.96	1%	-
photon all	**16**	**0.96**	**0.95**	**1.18**	**0.79**	**10%**	**-**
All	**22**	**0.90**	**0.86**	**1.18**	**0.24**	**26%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

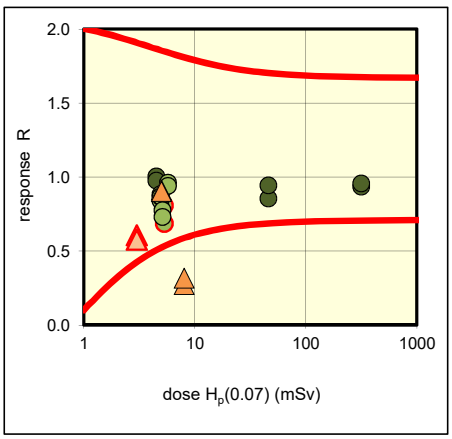
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

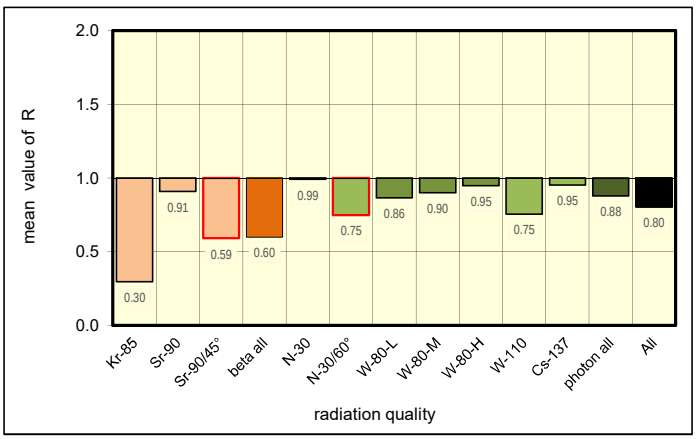
Reporting number 13 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	20	8.00	2.20	**0.28**	outlier
		29	8.00	2.54	**0.32**	outlier
	Sr-90	12	5.02	4.58	**0.91**	OK
		14	5.02	4.54	**0.90**	OK
	Sr-90/45°	16	3.00	1.82	**0.61**	OK
		27	3.00	1.73	**0.58**	OK
photon	N-30	10	4.50	4.52	**1.00**	OK
		11	4.50	4.40	**0.98**	OK
	N-30/60°	17	5.30	4.28	**0.81**	OK
		18	5.30	3.64	**0.69**	OK
	W-80-L	1	4.90	4.11	**0.84**	OK
		2	4.90	4.34	**0.89**	OK
		19	4.90	4.24	**0.87**	OK
		21	4.90	4.26	**0.87**	OK
	W-80-M	28	46.0	39.32	**0.85**	OK
		30	46.0	43.45	**0.94**	OK
	W-80-H	8	316	296.01	**0.94**	OK
		9	316	302.33	**0.96**	OK
	W-110	23	5.10	3.96	**0.78**	OK
		24	5.10	3.73	**0.73**	OK
	Cs-137	6	5.70	5.49	**0.96**	OK
		25	5.70	5.37	**0.94**	OK
	NIR	3				**Legend for Quality**
	NIR	7				L ..... low dose
	NIR	13				M ..... medium dose
	NIR	15				H ..... high dose
	NIR	22				NIR ..... not irradiated
	NIR	26				WIR .... wrongly irradiated
	NIR	31				
	NIR	32				
	WIR	4				
	WIR	5				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.30	0.30	0.32	0.28	10%	-
Sr-90	2	0.91	0.91	0.91	0.90	1%	Sr-90: 45°/0°
Sr-90/45°	2	0.59	0.59	0.61	0.58	4%	0.65
beta all	**6**	**0.59**	**0.60**	**0.91**	**0.28**	**46%**	**-**
N-30	2	0.99	0.99	1.00	0.98	2%	N-30: 60°/0°
N-30/60°	2	0.75	0.75	0.81	0.69	11%	0.75
W-80-L	4	0.87	0.86	0.89	0.84	2%	W-80: H/L
W-80-M	2	0.90	0.90	0.94	0.85	7%	1.09
W-80-H	2	0.95	0.95	0.96	0.94	1%	
W-110	2	0.75	0.75	0.78	0.73	4%	-
Cs-137	2	0.95	0.95	0.96	0.94	2%	-
photon all	**16**	**0.88**	**0.88**	**1.00**	**0.69**	**10%**	**-**
All	**22**	**0.87**	**0.80**	**1.00**	**0.28**	**25%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

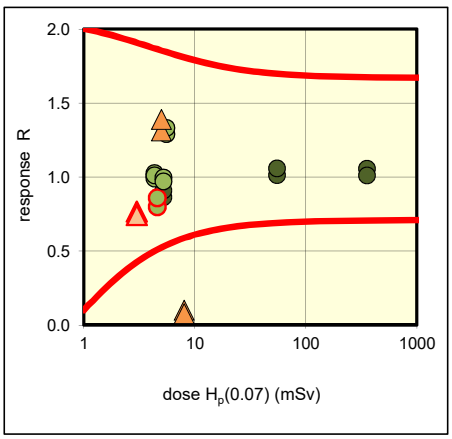
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

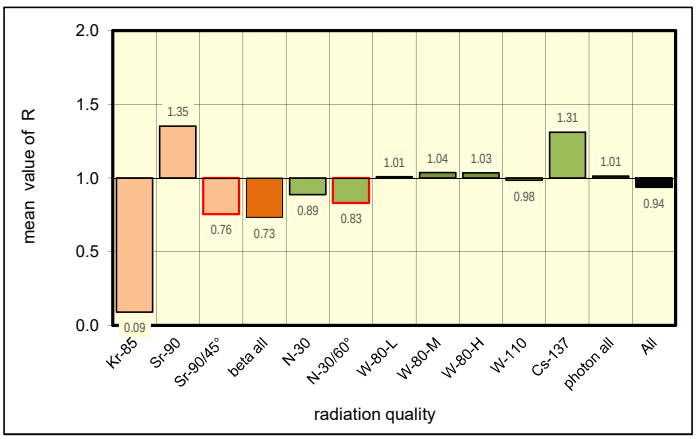
Reporting number 14 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	5	8.00	0.80	**0.10**	outlier
		23	8.00	0.62	**0.08**	outlier
	Sr-90	2	5.02	6.59	**1.31**	OK
		19	5.02	6.98	**1.39**	OK
	Sr-90/45°	12	3.00	2.30	**0.77**	OK
		32	3.00	2.23	**0.74**	OK
photon	N-30	18	5.20	4.50	**0.87**	OK
		20	5.20	4.73	**0.91**	OK
	N-30/60°	26	4.60	3.68	**0.80**	OK
		27	4.60	3.96	**0.86**	OK
	W-80-L	3	4.30	4.33	**1.01**	OK
		6	4.30	4.42	**1.03**	OK
		16	4.30	4.26	**0.99**	OK
		17	4.30	4.35	**1.01**	OK
	W-80-M	21	55.0	55.72	**1.01**	OK
		22	55.0	58.22	**1.06**	OK
	W-80-H	28	356	376.02	**1.06**	OK
		29	356	360.02	**1.01**	OK
	W-110	9	5.20	5.19	**1.00**	OK
		10	5.20	5.05	**0.97**	OK
	Cs-137	7	5.50	7.10	**1.29**	OK
		8	5.50	7.33	**1.33**	OK
	NIR	1				**Legend for Quality**
	NIR	4				L ……. low dose
	NIR	11				M …… medium dose
	NIR	13				H ……. high dose
	NIR	14				NIR ….. not irradiated
	NIR	15				WIR …. wrongly irradiated
	NIR	24				
	NIR	25				
	NIR	30				
	NIR	31				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.09	0.09	0.10	0.08	18%	-
Sr-90	2	1.35	1.35	1.39	1.31	4%	Sr-90: 45°/0°
Sr-90/45°	2	0.76	0.76	0.77	0.74	2%	0.56
beta all	**6**	**0.76**	**0.73**	**1.39**	**0.08**	**77%**	**-**
N-30	2	0.89	0.89	0.91	0.87	4%	N-30: 60°/0°
N-30/60°	2	0.83	0.83	0.86	0.80	5%	0.94
W-80-L	4	1.01	1.01	1.03	0.99	2%	W-80: H/L
W-80-M	2	1.04	1.04	1.06	1.01	3%	1.02
W-80-H	2	1.03	1.03	1.06	1.01	3%	
W-110	2	0.98	0.98	1.00	0.97	2%	-
Cs-137	2	1.31	1.31	1.33	1.29	2%	-
photon all	**16**	**1.01**	**1.01**	**1.33**	**0.80**	**14%**	**-**
All	**22**	**1.00**	**0.94**	**1.39**	**0.08**	**35%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

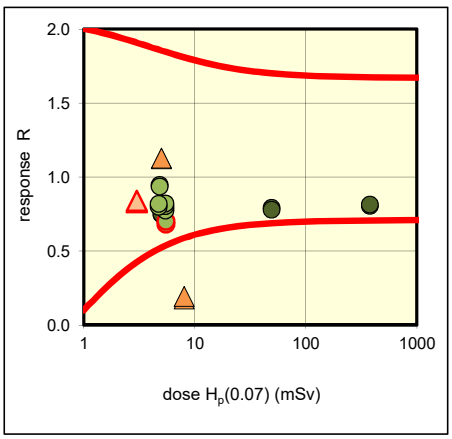
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

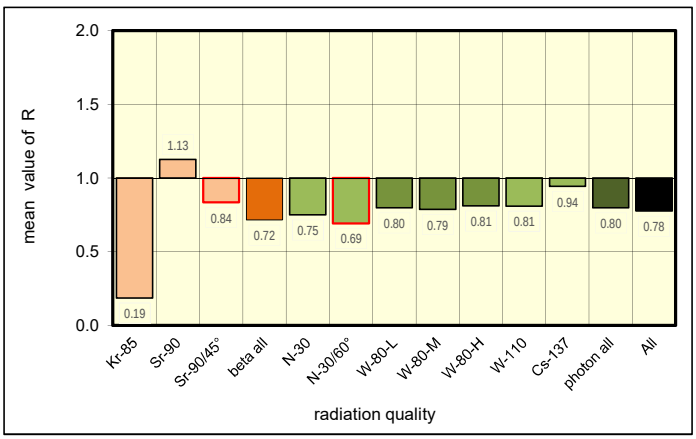
Reporting number 15 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	20	8.00	1.41	**0.18**	outlier
		26	8.00	1.56	**0.20**	outlier
	Sr-90	6	5.02	5.64	**1.12**	OK
		12	5.02	5.66	**1.13**	OK
	Sr-90/45°	17	3.00	2.49	**0.83**	OK
		18	3.00	2.52	**0.84**	OK
photon	N-30	23	5.00	3.74	**0.75**	OK
		24	5.00	3.76	**0.75**	OK
	N-30/60°	8	5.50	3.75	**0.68**	OK
		9	5.50	3.86	**0.70**	OK
	W-80-L	3	5.40	4.27	**0.79**	OK
		4	5.40	4.18	**0.77**	OK
		10	5.40	4.35	**0.81**	OK
		13	5.40	4.44	**0.82**	OK
	W-80-M	15	49.0	38.82	**0.79**	OK
		16	49.0	38.22	**0.78**	OK
	W-80-H	21	378	304.72	**0.81**	OK
		22	378	307.72	**0.81**	OK
	W-110	5	4.70	3.76	**0.80**	OK
		7	4.70	3.85	**0.82**	OK
	Cs-137	27	4.80	4.55	**0.95**	OK
		29	4.80	4.50	**0.94**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ..... low dose
	NIR	11				M ..... medium dose
	NIR	14				H ..... high dose
	NIR	19				NIR ..... not irradiated
	NIR	25				WIR .... wrongly irradiated
	NIR	28				
	NIR	30				
	NIR	31				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.19	0.19	0.20	0.18	7%	-
Sr-90	2	1.13	1.13	1.13	1.12	0%	Sr-90: 45°/0°
Sr-90/45°	2	0.84	0.84	0.84	0.83	1%	0.74
beta all	**6**	**0.84**	**0.72**	**1.13**	**0.18**	**60%**	**-**
N-30	2	0.75	0.75	0.75	0.75	0%	N-30: 60°/0°
N-30/60°	2	0.69	0.69	0.70	0.68	2%	0.92
W-80-L	4	0.80	0.80	0.82	0.77	3%	W-80: H/L
W-80-M	2	0.79	0.79	0.79	0.78	1%	1.01
W-80-H	2	0.81	0.81	0.81	0.81	1%	
W-110	2	0.81	0.81	0.82	0.80	2%	-
Cs-137	2	0.94	0.94	0.95	0.94	1%	-
photon all	**16**	**0.80**	**0.80**	**0.95**	**0.68**	**9%**	**-**
All	**22**	**0.80**	**0.78**	**1.13**	**0.18**	**29%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

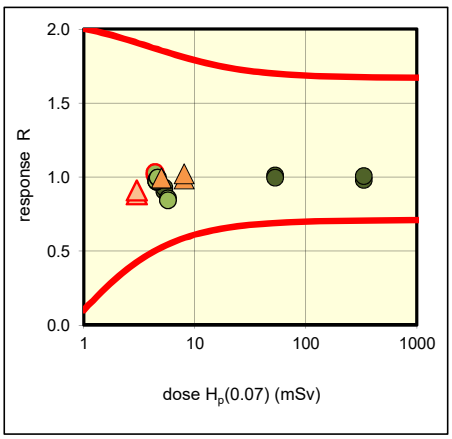
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

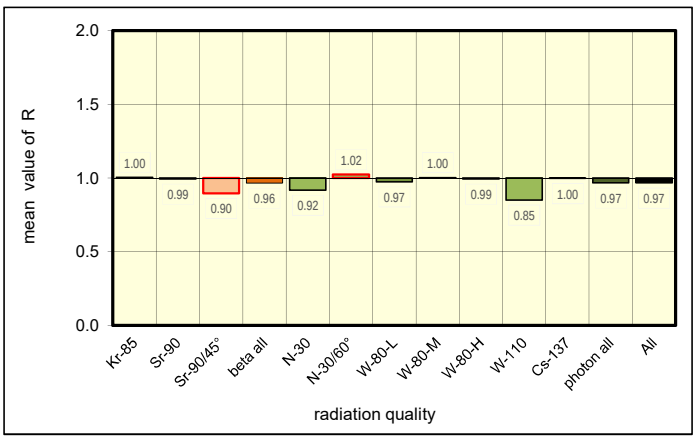
Reporting number 16 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	17	8.00	7.90	**0.99**	OK
		27	8.00	8.17	**1.02**	OK
	Sr-90	7	5.02	4.98	**0.99**	OK
		9	5.02	4.99	**0.99**	OK
	Sr-90/45°	2	3.00	2.65	**0.88**	OK
		14	3.00	2.73	**0.91**	OK
photon	N-30	21	5.30	4.80	**0.91**	OK
		22	5.30	4.93	**0.93**	OK
	N-30/60°	31	4.40	4.47	**1.02**	OK
		32	4.40	4.54	**1.03**	OK
	W-80-L	8	4.50	4.36	**0.97**	OK
		10	4.50	4.43	**0.98**	OK
		19	4.50	4.38	**0.97**	OK
		20	4.50	4.37	**0.97**	OK
	W-80-M	23	53.0	53.55	**1.01**	OK
		25	53.0	52.79	**1.00**	OK
	W-80-H	5	333	326.49	**0.98**	OK
		6	333	335.06	**1.01**	OK
	W-110	3	5.70	4.89	**0.86**	OK
		4	5.70	4.81	**0.84**	OK
	Cs-137	28	4.60	4.58	**1.00**	OK
		29	4.60	4.59	**1.00**	OK
	NIR	1				**Legend for Quality**
	NIR	11				L ..... low dose
	NIR	12				M ..... medium dose
	NIR	13				H ..... high dose
	NIR	15				NIR ..... not irradiated
	NIR	16				WIR .... wrongly irradiated
	NIR	18				
	NIR	24				
	NIR	26				
	NIR	30				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	1.00	1.00	1.02	0.99	2%	-
Sr-90	2	0.99	0.99	0.99	0.99	0%	Sr-90: 45°/0°
Sr-90/45°	2	0.90	0.90	0.91	0.88	2%	0.90
beta all	**6**	**0.99**	**0.96**	**1.02**	**0.88**	**6%**	**-**
N-30	2	0.92	0.92	0.93	0.91	2%	N-30: 60°/0°
N-30/60°	2	1.02	1.02	1.03	1.02	1%	1.12
W-80-L	4	0.97	0.97	0.98	0.97	1%	W-80: H/L
W-80-M	2	1.00	1.00	1.01	1.00	1%	1.02
W-80-H	2	0.99	0.99	1.01	0.98	2%	
W-110	2	0.85	0.85	0.86	0.84	1%	-
Cs-137	2	1.00	1.00	1.00	1.00	0%	-
photon all	**16**	**0.98**	**0.97**	**1.03**	**0.84**	**6%**	**-**
All	**22**	**0.99**	**0.97**	**1.03**	**0.84**	**6%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

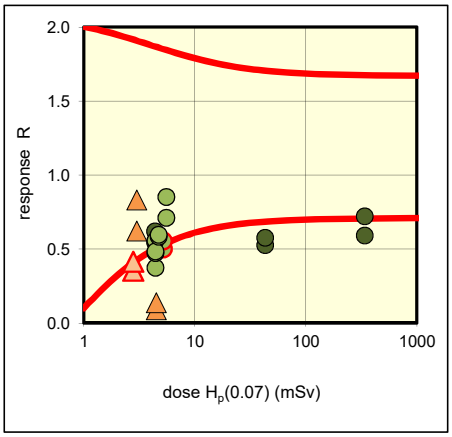
Reporting number 17 : Extremity - photon dosemeter

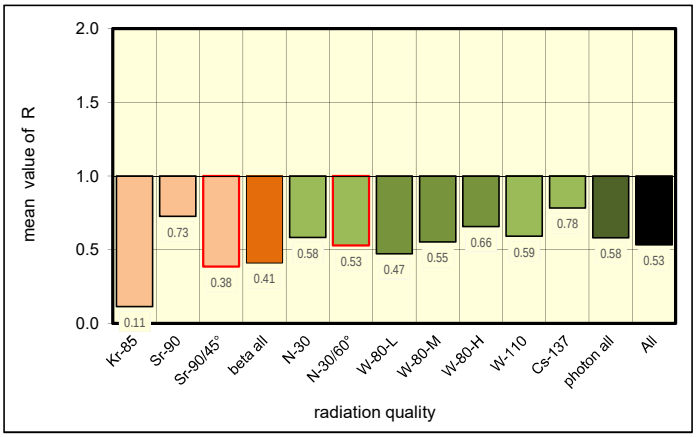
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	1	4.51	0.41	0.09	(outlier)
		17	4.51	0.62	0.14	(outlier)
	Sr-90	9	3.00	1.86	0.62	(OK)
		25	3.00	2.49	0.83	(OK)
	Sr-90/45°	10	2.80	0.99	0.35	(outlier)
		31	2.80	1.16	0.41	(OK)
photon	**N-30**	13	4.40	2.40	**0.55**	OK
		14	4.40	2.73	**0.62**	OK
	N-30/60°	15	5.20	2.60	**0.50**	outlier
		18	5.20	2.89	**0.56**	OK
	W-80-L	16	4.40	1.65	**0.38**	outlier
		19	4.40	2.46	**0.56**	OK
		27	4.40	2.08	**0.47**	outlier
		29	4.40	2.13	**0.48**	outlier
	W-80-M	24	43.0	22.68	**0.53**	outlier
		28	43.0	24.83	**0.58**	outlier
	W-80-H	30	340	245.32	**0.72**	OK
		32	340	201.50	**0.59**	outlier
	W-110	6	4.70	2.74	**0.58**	OK
		7	4.70	2.81	**0.60**	OK
	Cs-137	3	5.50	3.92	**0.71**	OK
		4	5.50	4.69	**0.85**	OK
	NIR	2				**Legend for Quality**
	NIR	5				L ……. low dose
	NIR	8				M …… medium dose
	NIR	11				H ……. high dose
	NIR	12				NIR ….. not irradiated
	NIR	20				WIR …. wrongly irradiated
	NIR	21				
	NIR	22				
	NIR	23				
	NIR	26				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.11	0.11	0.14	0.09	29%	-
Sr-90	2	0.73	0.73	0.83	0.62	20%	Sr-90: 45°/0°
Sr-90/45°	2	0.38	0.38	0.41	0.35	11%	0.53
beta all	6	0.38	0.41	0.83	0.09	70%	-
N-30	2	0.58	0.58	0.62	0.55	9%	**N-30: 60°/0°**
N-30/60°	2	0.53	0.53	0.56	0.50	7%	0.91
W-80-L	4	0.48	0.47	0.56	0.38	16%	**W-80: H/L**
W-80-M	2	0.55	0.55	0.58	0.53	6%	1.39
W-80-H	2	0.66	0.66	0.72	0.59	14%	
W-110	2	0.59	0.59	0.60	0.58	2%	-
Cs-137	2	0.78	0.78	0.85	0.71	13%	-
photon all	**16**	**0.57**	**0.58**	**0.85**	**0.38**	**19%**	**-**
All	22	0.56	0.53	0.85	0.09	35%	-

outliers: 7 of 16 **fraction of outliers: 44%**





Results: $IC2019_{ext\ eye}$

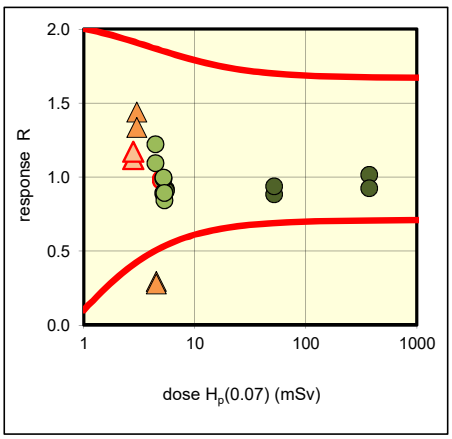
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

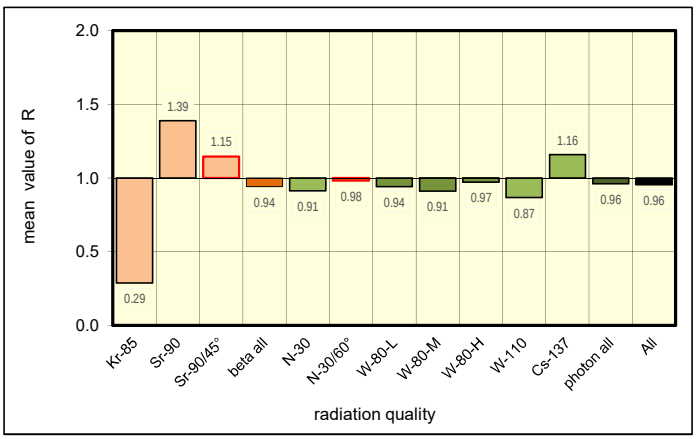
Reporting number 18 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	15	4.51	1.33	**0.29**	outlier
		29	4.51	1.25	**0.28**	outlier
	Sr-90	19	3.00	4.32	**1.44**	OK
		26	3.00	4.01	**1.34**	OK
	Sr-90/45°	2	2.80	3.14	**1.12**	OK
		7	2.80	3.28	**1.17**	OK
photon	N-30	1	5.50	5.06	**0.92**	OK
		4	5.50	4.99	**0.91**	OK
	N-30/60°	13	5.00	4.94	**0.99**	OK
		14	5.00	4.89	**0.98**	OK
	W-80-L	16	5.20	5.14	**0.99**	OK
		20	5.20	4.61	**0.89**	OK
		21	5.20	4.66	**0.90**	OK
		22	5.20	5.18	**1.00**	OK
	W-80-M	17	52.0	45.91	**0.88**	OK
		18	52.0	48.75	**0.94**	OK
	W-80-H	24	373	379.21	**1.02**	OK
		25	373	345.18	**0.93**	OK
	W-110	8	5.30	4.47	**0.84**	OK
		9	5.30	4.73	**0.89**	OK
	Cs-137	10	4.40	4.82	**1.09**	OK
		11	4.40	5.38	**1.22**	OK
	NIR	3				**Legend for Quality**
	NIR	5				L ..... low dose
	NIR	6				M ..... medium dose
	NIR	12				H ..... high dose
	NIR	23				NIR ..... not irradiated
	NIR	27				WIR .... wrongly irradiated
	NIR	28				
	NIR	30				
	NIR	31				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.29	0.29	0.29	0.28	4%	-
Sr-90	2	1.39	1.39	1.44	1.34	5%	Sr-90: 45°/0°
Sr-90/45°	2	1.15	1.15	1.17	1.12	3%	0.83
beta all	**6**	**1.15**	**0.94**	**1.44**	**0.28**	**55%**	**-**
N-30	2	0.91	0.91	0.92	0.91	1%	N-30: 60°/0°
N-30/60°	2	0.98	0.98	0.99	0.98	1%	1.08
W-80-L	4	0.94	0.94	1.00	0.89	6%	W-80: H/L
W-80-M	2	0.91	0.91	0.94	0.88	4%	1.03
W-80-H	2	0.97	0.97	1.02	0.93	7%	
W-110	2	0.87	0.87	0.89	0.84	4%	-
Cs-137	2	1.16	1.16	1.22	1.09	8%	-
photon all	**16**	**0.93**	**0.96**	**1.22**	**0.84**	**10%**	**-**
All	**22**	**0.96**	**0.96**	**1.44**	**0.28**	**28%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

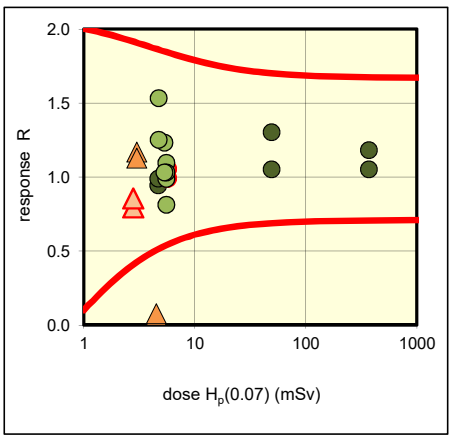
Reporting number 19 : Extremity - photon dosemeter

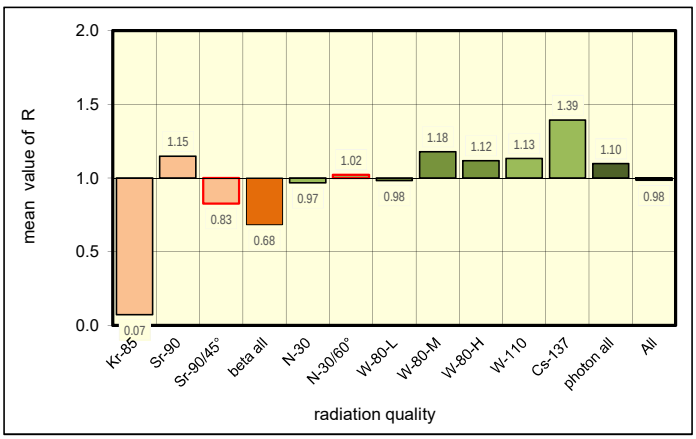
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	9	4.51	0.30	0.07	(outlier)
		23	4.51	0.35	0.08	(outlier)
	Sr-90	16	3.00	3.51	1.17	(OK)
		17	3.00	3.38	1.13	(OK)
	Sr-90/45°	5	2.80	2.23	0.79	(OK)
		8	2.80	2.40	0.86	(OK)
photon	N-30	18	4.70	4.44	**0.94**	OK
		19	4.70	4.65	**0.99**	OK
	N-30/60°	22	5.70	5.65	**0.99**	OK
		26	5.70	6.01	**1.05**	OK
	W-80-L	2	5.50	4.47	**0.81**	OK
		4	5.50	5.44	**0.99**	OK
		27	5.50	6.03	**1.10**	OK
		30	5.50	5.68	**1.03**	OK
	W-80-M	3	49.0	51.59	**1.05**	OK
		6	49.0	63.91	**1.30**	OK
	W-80-H	12	371	438.41	**1.18**	OK
		15	371	390.22	**1.05**	OK
	W-110	28	5.30	5.47	**1.03**	OK
		29	5.30	6.54	**1.23**	OK
	Cs-137	7	4.70	5.89	**1.25**	OK
		10	4.70	7.20	**1.53**	OK
	NIR	1				**Legend for Quality**
	NIR	11				L ..... low dose
	NIR	13				M ..... medium dose
	NIR	14				H ..... high dose
	NIR	20				NIR ..... not irradiated
	NIR	21				WIR .... wrongly irradiated
	NIR	24				
	NIR	25				
	NIR	31				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.07	0.07	0.08	0.07	11%	-
Sr-90	2	1.15	1.15	1.17	1.13	3%	Sr-90: 45°/0°
Sr-90/45°	2	0.83	0.83	0.86	0.79	5%	0.72
beta all	6	0.83	0.68	1.17	0.07	73%	-
N-30	2	0.97	0.97	0.99	0.94	3%	**N-30: 60°/0°**
N-30/60°	2	1.02	1.02	1.05	0.99	4%	1.06
W-80-L	4	1.01	0.98	1.10	0.81	12%	**W-80: H/L**
W-80-M	2	1.18	1.18	1.30	1.05	15%	1.14
W-80-H	2	1.12	1.12	1.18	1.05	8%	
W-110	2	1.13	1.13	1.23	1.03	13%	-
Cs-137	2	1.39	1.39	1.53	1.25	14%	-
photon all	**16**	**1.05**	**1.10**	**1.53**	**0.81**	**16%**	**-**
All	22	1.04	0.98	1.53	0.07	34%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

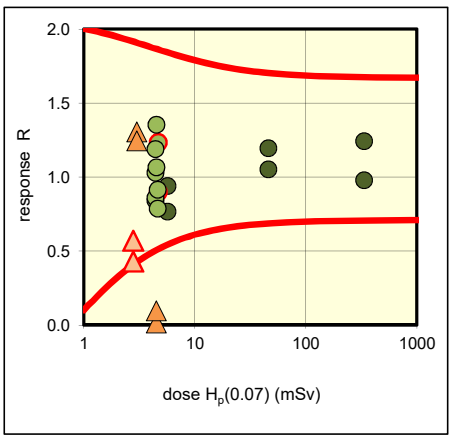
Reporting number 20 : Extremity - photon dosemeter

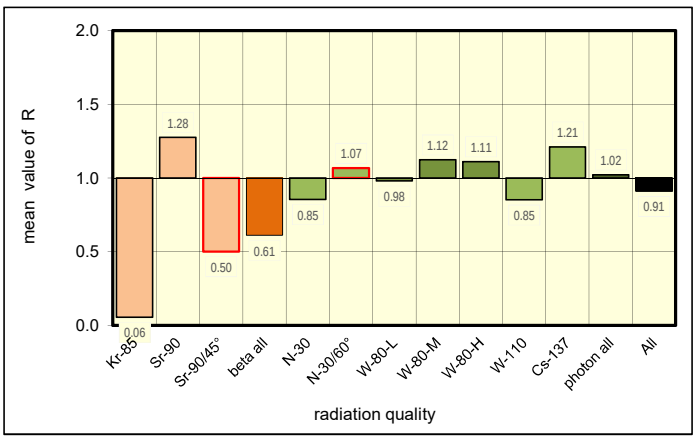
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	16	4.51	0.06	0.01	(outlier)
		24	4.51	0.43	0.10	(outlier)
	Sr-90	10	3.00	3.92	1.31	(OK)
		22	3.00	3.74	1.25	(OK)
	Sr-90/45°	4	2.80	1.21	0.43	(OK)
		25	2.80	1.60	0.57	(OK)
photon	N-30	17	5.70	5.36	**0.94**	OK
		19	5.70	4.38	**0.77**	OK
	N-30/60°	26	4.70	5.80	**1.23**	OK
		27	4.70	4.23	**0.90**	OK
	W-80-L	11	4.40	4.53	**1.03**	OK
		13	4.40	3.70	**0.84**	OK
		31	4.40	3.79	**0.86**	OK
		32	4.40	5.23	**1.19**	OK
	W-80-M	14	46.0	48.38	**1.05**	OK
		15	46.0	54.94	**1.19**	OK
	W-80-H	1	336	417.81	**1.24**	OK
		2	336	328.70	**0.98**	OK
	W-110	21	4.60	3.63	**0.79**	OK
		28	4.60	4.21	**0.91**	OK
	Cs-137	3	4.50	4.80	**1.07**	OK
		5	4.50	6.10	**1.35**	OK
	NIR	6				**Legend for Quality**
	NIR	7				L ……. low dose
	NIR	8				M …… medium dose
	NIR	9				H ……. high dose
	NIR	12				NIR ….. not irradiated
	NIR	18				WIR …. wrongly irradiated
	NIR	20				
	NIR	23				
	NIR	29				
	NIR	30				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.06	0.06	0.10	0.01	105%	-
Sr-90	2	1.28	1.28	1.31	1.25	3%	Sr-90: 45°/0°
Sr-90/45°	2	0.50	0.50	0.57	0.43	20%	0.39
beta all	6	0.50	0.61	1.31	0.01	91%	-
N-30	2	0.85	0.85	0.94	0.77	14%	**N-30: 60°/0°**
N-30/60°	2	1.07	1.07	1.23	0.90	22%	1.25
W-80-L	4	0.95	0.98	1.19	0.84	17%	**W-80: H/L**
W-80-M	2	1.12	1.12	1.19	1.05	9%	1.13
W-80-H	2	1.11	1.11	1.24	0.98	17%	
W-110	2	0.85	0.85	0.91	0.79	11%	-
Cs-137	2	1.21	1.21	1.35	1.07	17%	-
photon all	**16**	**1.00**	**1.02**	**1.35**	**0.77**	**17%**	**-**
All	22	0.96	0.91	1.35	0.01	40%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

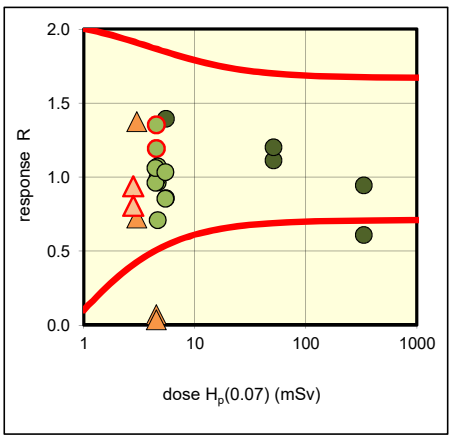
Reporting number 21 : Extremity - photon dosemeter

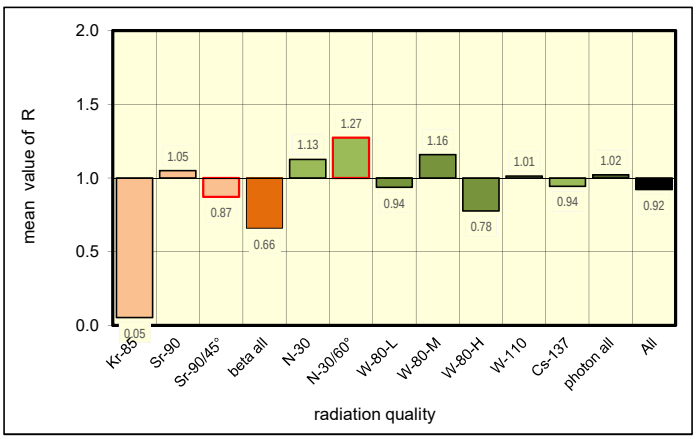
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	12	4.51	0.32	0.07	(outlier)
		32	4.51	0.16	0.04	(outlier)
	Sr-90	25	3.00	2.17	0.72	(OK)
		31	3.00	4.13	1.38	(OK)
	Sr-90/45°	11	2.80	2.63	0.94	(OK)
		15	2.80	2.26	0.81	(OK)
photon	N-30	28	5.50	4.72	**0.86**	OK
		29	5.50	7.67	**1.39**	OK
	N-30/60°	1	4.50	6.09	**1.35**	OK
		5	4.50	5.37	**1.19**	OK
	W-80-L	7	4.60	4.94	**1.07**	OK
		9	4.60	4.44	**0.97**	OK
		14	4.60	3.27	**0.71**	OK
		17	4.60	4.59	**1.00**	OK
	W-80-M	26	51.0	56.78	**1.11**	OK
		27	51.0	61.33	**1.20**	OK
	W-80-H	22	333	203.03	**0.61**	outlier
		23	333	314.14	**0.94**	OK
	W-110	16	4.40	4.24	**0.96**	OK
		18	4.40	4.68	**1.06**	OK
	Cs-137	3	5.40	5.58	**1.03**	OK
		4	5.40	4.62	**0.85**	OK
	NIR	2				**Legend for Quality**
	NIR	6				L ……. low dose
	NIR	8				M …… medium dose
	NIR	10				H ……. high dose
	NIR	13				NIR ….. not irradiated
	NIR	19				WIR …. wrongly irradiated
	NIR	20				
	NIR	21				
	NIR	24				
	NIR	30				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.05	0.05	0.07	0.04	46%	-
Sr-90	2	1.05	1.05	1.38	0.72	44%	Sr-90: 45°/0°
Sr-90/45°	2	0.87	0.87	0.94	0.81	11%	0.83
beta all	6	0.76	0.66	1.38	0.04	79%	-
N-30	2	1.13	1.13	1.39	0.86	34%	**N-30: 60°/0°**
N-30/60°	2	1.27	1.27	1.35	1.19	9%	1.13
W-80-L	4	0.98	0.94	1.07	0.71	17%	**W-80: H/L**
W-80-M	2	1.16	1.16	1.20	1.11	5%	0.83
W-80-H	2	0.78	0.78	0.94	0.61	30%	
W-110	2	1.01	1.01	1.06	0.96	7%	-
Cs-137	2	0.94	0.94	1.03	0.85	13%	-
photon all	**16**	**1.02**	**1.02**	**1.39**	**0.61**	**21%**	**-**
All	22	0.96	0.92	1.39	0.04	38%	-

outliers: 1 of 16 **fraction of outliers: 6%**





Results: $IC2019_{ext\ eye}$

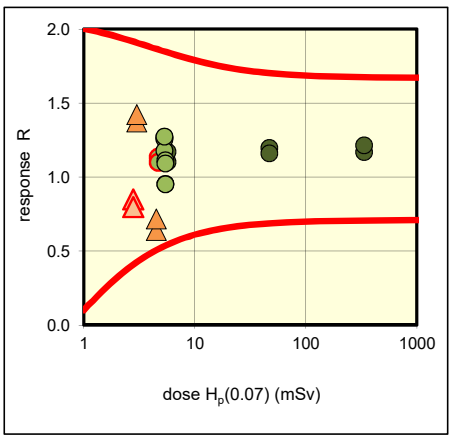
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

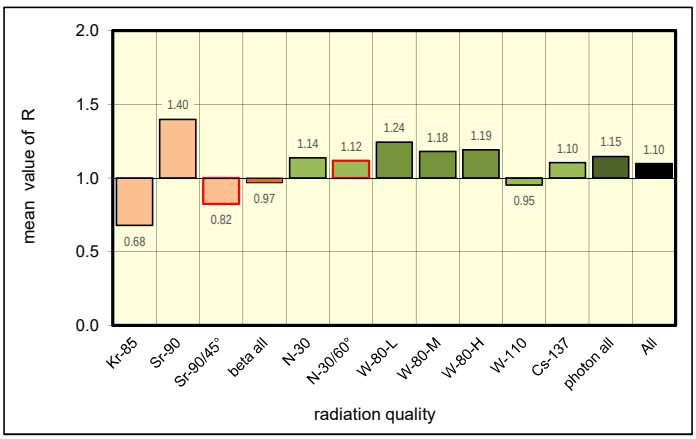
Reporting number 22 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	5	4.51	2.88	**0.64**	OK
		23	4.51	3.24	**0.72**	OK
	Sr-90	2	3.00	4.12	**1.37**	OK
		20	3.00	4.27	**1.42**	OK
	Sr-90/45°	4	2.80	2.38	**0.85**	OK
		21	2.80	2.23	**0.80**	OK
photon	N-30	11	5.70	6.28	**1.10**	OK
		12	5.70	6.68	**1.17**	OK
	N-30/60°	13	4.70	5.33	**1.13**	OK
		14	4.70	5.17	**1.10**	OK
	W-80-L	18	5.30	6.72	**1.27**	OK
		24	5.30	6.66	**1.26**	OK
		28	5.30	6.25	**1.18**	OK
		31	5.30	6.75	**1.27**	OK
	W-80-M	3	47.0	56.31	**1.20**	OK
		7	47.0	54.55	**1.16**	OK
	W-80-H	29	336	392.95	**1.17**	OK
		30	336	408.27	**1.22**	OK
	W-110	8	5.40	5.15	**0.95**	OK
		9	5.40	5.14	**0.95**	OK
	Cs-137	15	5.40	6.02	**1.11**	OK
		16	5.40	5.90	**1.09**	OK
	NIR	1				**Legend for Quality**
	NIR	6				L ……. low dose
	NIR	10				M …… medium dose
	NIR	17				H ……. high dose
	NIR	19				NIR ….. not irradiated
	NIR	22				WIR …. wrongly irradiated
	NIR	25				
	NIR	26				
	NIR	27				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.68	0.68	0.72	0.64	8%	-
Sr-90	2	1.40	1.40	1.42	1.37	3%	Sr-90: 45°/0°
Sr-90/45°	2	0.82	0.82	0.85	0.80	5%	0.59
beta all	**6**	**0.82**	**0.97**	**1.42**	**0.64**	**35%**	**-**
N-30	2	1.14	1.14	1.17	1.10	4%	N-30: 60°/0°
N-30/60°	2	1.12	1.12	1.13	1.10	2%	0.98
W-80-L	4	1.26	1.24	1.27	1.18	4%	W-80: H/L
W-80-M	2	1.18	1.18	1.20	1.16	2%	0.96
W-80-H	2	1.19	1.19	1.22	1.17	3%	
W-110	2	0.95	0.95	0.95	0.95	0%	-
Cs-137	2	1.10	1.10	1.11	1.09	1%	-
photon all	**16**	**1.17**	**1.15**	**1.27**	**0.95**	**8%**	**-**
All	**22**	**1.15**	**1.10**	**1.42**	**0.64**	**18%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

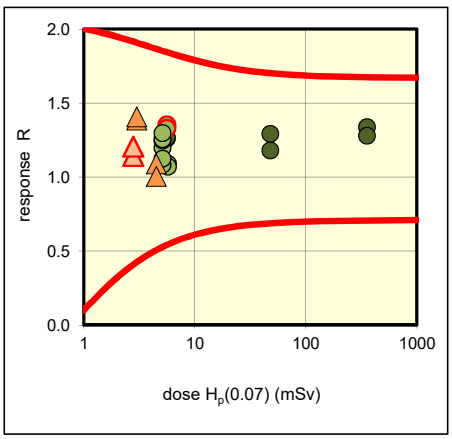
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

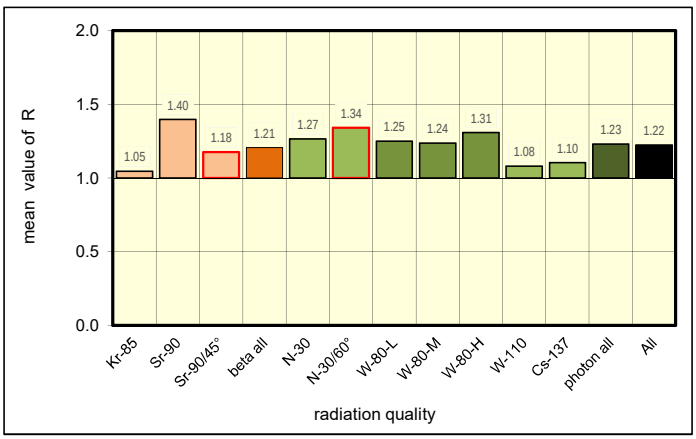
Reporting number 23 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	6	4.51	4.91	**1.09**	OK
		8	4.51	4.53	**1.00**	OK
	Sr-90	13	3.00	4.16	**1.39**	OK
		30	3.00	4.22	**1.41**	OK
	Sr-90/45°	14	2.80	3.20	**1.14**	OK
		28	2.80	3.38	**1.21**	OK
photon	N-30	31	5.60	7.06	**1.26**	OK
		32	5.60	7.11	**1.27**	OK
	N-30/60°	16	5.60	7.58	**1.35**	OK
		17	5.60	7.45	**1.33**	OK
	W-80-L	4	5.10	6.11	**1.20**	OK
		5	5.10	6.37	**1.25**	OK
		18	5.10	6.41	**1.26**	OK
		22	5.10	6.62	**1.30**	OK
	W-80-M	12	48.0	56.68	**1.18**	OK
		15	48.0	62.04	**1.29**	OK
	W-80-H	21	356	475.97	**1.34**	OK
		23	356	455.66	**1.28**	OK
	W-110	25	5.70	6.21	**1.09**	OK
		26	5.70	6.10	**1.07**	OK
	Cs-137	9	5.10	5.53	**1.08**	OK
		11	5.10	5.74	**1.13**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	3				M …… medium dose
	NIR	7				H ……. high dose
	NIR	10				NIR ….. not irradiated
	NIR	19				WIR …. wrongly irradiated
	NIR	20				
	NIR	24				
	NIR	27				
	NIR	29				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	1.05	1.05	1.09	1.00	6%	-
Sr-90	2	1.40	1.40	1.41	1.39	1%	Sr-90: 45°/0°
Sr-90/45°	2	1.18	1.18	1.21	1.14	4%	0.84
beta all	**6**	**1.18**	**1.21**	**1.41**	**1.00**	**13%**	**-**
N-30	2	1.27	1.27	1.27	1.26	0%	N-30: 60°/0°
N-30/60°	2	1.34	1.34	1.35	1.33	1%	1.06
W-80-L	4	1.25	1.25	1.30	1.20	3%	W-80: H/L
W-80-M	2	1.24	1.24	1.29	1.18	6%	1.05
W-80-H	2	1.31	1.31	1.34	1.28	3%	
W-110	2	1.08	1.08	1.09	1.07	1%	-
Cs-137	2	1.10	1.10	1.13	1.08	3%	-
photon all	**16**	**1.26**	**1.23**	**1.35**	**1.07**	**8%**	**-**
All	**22**	**1.25**	**1.22**	**1.41**	**1.00**	**9%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

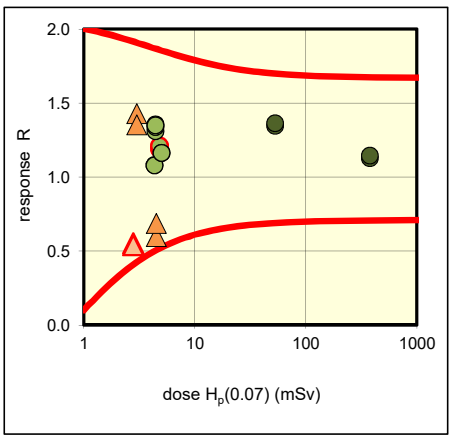
Reporting number 24 : Extremity - photon dosemeter

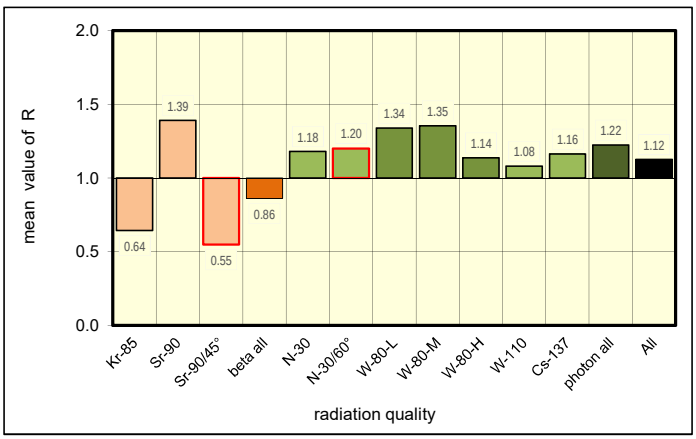
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	16	4.51	2.70	0.60	(OK)
		27	4.51	3.10	0.69	(OK)
	Sr-90	4	3.00	4.29	1.43	(OK)
		19	3.00	4.06	1.35	(OK)
	Sr-90/45°	18	2.80	1.55	0.55	(OK)
		28	2.80	1.51	0.54	(OK)
photon	N-30	7	4.90	5.76	**1.18**	OK
		11	4.90	5.81	**1.18**	OK
	N-30/60°	12	4.80	5.72	**1.19**	OK
		13	4.80	5.81	**1.21**	OK
	W-80-L	9	4.40	5.97	**1.36**	OK
		14	4.40	5.77	**1.31**	OK
		23	4.40	5.89	**1.34**	OK
		29	4.40	5.94	**1.35**	OK
	W-80-M	24	53.0	71.33	**1.35**	OK
		25	53.0	72.25	**1.36**	OK
	W-80-H	8	378	426.31	**1.13**	OK
		10	378	432.76	**1.14**	OK
	W-110	31	4.30	4.65	**1.08**	OK
		32	4.30	4.65	**1.08**	OK
	Cs-137	2	5.00	5.82	**1.16**	OK
		3	5.00	5.82	**1.16**	OK
	NIR	1				**Legend for Quality**
	NIR	5				L ..... low dose
	NIR	6				M ..... medium dose
	NIR	15				H ..... high dose
	NIR	17				NIR ..... not irradiated
	NIR	20				WIR .... wrongly irradiated
	NIR	21				
	NIR	22				
	NIR	26				
	NIR	30				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.64	0.64	0.69	0.60	10%	-
Sr-90	2	1.39	1.39	1.43	1.35	4%	Sr-90: 45°/0°
Sr-90/45°	2	0.55	0.55	0.55	0.54	2%	0.39
beta all	6	0.64	0.86	1.43	0.54	48%	-
N-30	2	1.18	1.18	1.18	1.18	1%	**N-30: 60°/0°**
N-30/60°	2	1.20	1.20	1.21	1.19	1%	1.02
W-80-L	4	1.34	1.34	1.36	1.31	2%	**W-80: H/L**
W-80-M	2	1.35	1.35	1.36	1.35	1%	0.85
W-80-H	2	1.14	1.14	1.14	1.13	1%	
W-110	2	1.08	1.08	1.08	1.08	0%	-
Cs-137	2	1.16	1.16	1.16	1.16	0%	-
photon all	**16**	**1.19**	**1.22**	**1.36**	**1.08**	**8%**	**-**
All	22	1.18	1.12	1.43	0.54	24%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

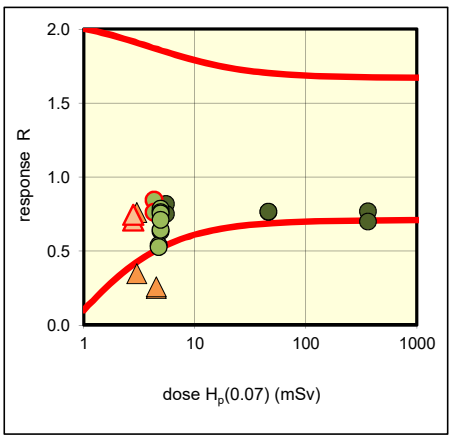
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

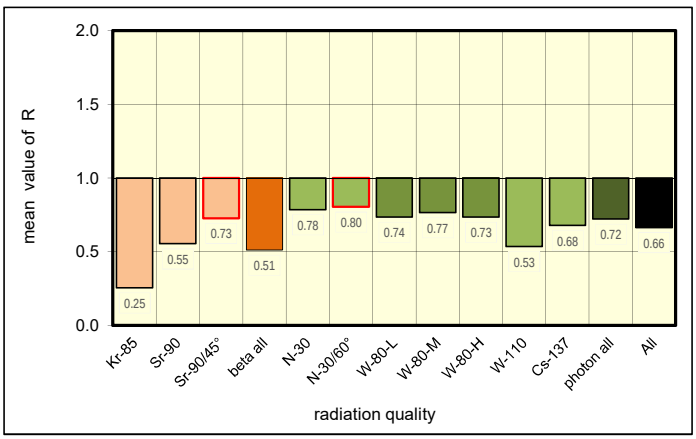
Reporting number 25 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	14	4.51	1.12	**0.25**	outlier
		21	4.51	1.17	**0.26**	outlier
	Sr-90	4	3.00	1.04	**0.35**	outlier
		28	3.00	2.28	**0.76**	OK
	Sr-90/45°	20	2.80	1.98	**0.71**	OK
		26	2.80	2.09	**0.75**	OK
photon	N-30	29	5.50	4.50	**0.82**	OK
		31	5.50	4.13	**0.75**	OK
	N-30/60°	30	4.30	3.63	**0.84**	OK
		32	4.30	3.28	**0.76**	OK
	W-80-L	6	4.90	3.11	**0.63**	OK
		8	4.90	3.86	**0.79**	OK
		10	4.90	3.74	**0.76**	OK
		16	4.90	3.70	**0.76**	OK
	W-80-M	17	46.0	35.16	**0.76**	OK
		19	46.0	35.25	**0.77**	OK
	W-80-H	22	362	278.60	**0.77**	OK
		23	362	253.50	**0.70**	outlier
	W-110	1	4.70	2.54	**0.54**	OK
		3	4.70	2.48	**0.53**	OK
	Cs-137	15	4.90	3.16	**0.64**	OK
		18	4.90	3.49	**0.71**	OK
	NIR	2				**Legend for Quality**
	NIR	5				L ……. low dose
	NIR	7				M …… medium dose
	NIR	9				H ……. high dose
	NIR	11				NIR ….. not irradiated
	NIR	12				WIR …. wrongly irradiated
	NIR	13				
	NIR	24				
	NIR	25				
	NIR	27				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.25	0.25	0.26	0.25	3%	-
Sr-90	2	0.55	0.55	0.76	0.35	53%	Sr-90: 45°/0°
Sr-90/45°	2	0.73	0.73	0.75	0.71	4%	1.31
beta all	**6**	**0.53**	**0.51**	**0.76**	**0.25**	**49%**	**-**
N-30	2	0.78	0.78	0.82	0.75	6%	N-30: 60°/0°
N-30/60°	2	0.80	0.80	0.84	0.76	7%	1.02
W-80-L	4	0.76	0.74	0.79	0.63	9%	W-80: H/L
W-80-M	2	0.77	0.77	0.77	0.76	0%	1.00
W-80-H	2	0.73	0.73	0.77	0.70	7%	
W-110	2	0.53	0.53	0.54	0.53	2%	-
Cs-137	2	0.68	0.68	0.71	0.64	7%	-
photon all	**16**	**0.76**	**0.72**	**0.84**	**0.53**	**13%**	**-**
All	**22**	**0.75**	**0.66**	**0.84**	**0.25**	**26%**	**-**

outliers: 4 of 22 **fraction of outliers: 18%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

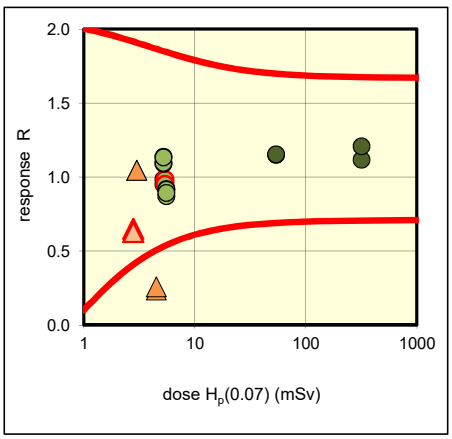
Reporting number 26 : Extremity - photon dosemeter

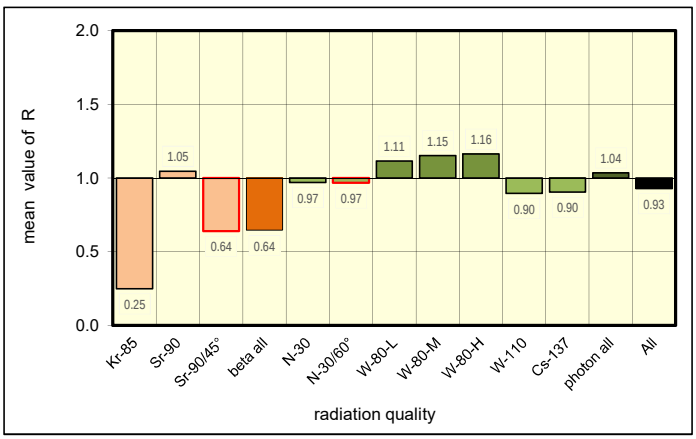
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	11	4.51	1.07	0.24	(outlier)
		15	4.51	1.17	0.26	(outlier)
	Sr-90	5	3.00	3.14	1.05	(OK)
		21	3.00	3.14	1.05	(OK)
	Sr-90/45°	18	2.80	1.82	0.65	(OK)
		22	2.80	1.76	0.63	(OK)
photon	N-30	6	5.20	5.13	**0.99**	OK
		16	5.20	4.95	**0.95**	OK
	N-30/60°	14	5.40	5.31	**0.98**	OK
		20	5.40	5.13	**0.95**	OK
	W-80-L	17	5.20	5.67	**1.09**	OK
		19	5.20	5.70	**1.10**	OK
		28	5.20	5.92	**1.14**	OK
		29	5.20	5.90	**1.13**	OK
	W-80-M	24	54.0	62.13	**1.15**	OK
		27	54.0	62.37	**1.16**	OK
	W-80-H	1	317	354.20	**1.12**	OK
		2	317	383.04	**1.21**	OK
	W-110	12	5.50	4.79	**0.87**	OK
		13	5.50	5.06	**0.92**	OK
	Cs-137	8	5.50	5.03	**0.91**	OK
		9	5.50	4.92	**0.89**	OK
	NIR	3				**Legend for Quality**
	NIR	4				L ..... low dose
	NIR	7				M ..... medium dose
	NIR	10				H ..... high dose
	NIR	23				NIR ..... not irradiated
	NIR	25				WIR .... wrongly irradiated
	NIR	26				
	NIR	30				
	NIR	31				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.25	0.25	0.26	0.24	6%	-
Sr-90	2	1.05	1.05	1.05	1.05	0%	Sr-90: 45°/0°
Sr-90/45°	2	0.64	0.64	0.65	0.63	2%	0.61
beta all	6	0.64	0.64	1.05	0.24	55%	-
N-30	2	0.97	0.97	0.99	0.95	3%	**N-30: 60°/0°**
N-30/60°	2	0.97	0.97	0.98	0.95	2%	1.00
W-80-L	4	1.12	1.11	1.14	1.09	2%	**W-80: H/L**
W-80-M	2	1.15	1.15	1.16	1.15	0%	1.04
W-80-H	2	1.16	1.16	1.21	1.12	6%	
W-110	2	0.90	0.90	0.92	0.87	4%	-
Cs-137	2	0.90	0.90	0.91	0.89	2%	-
photon all	**16**	**1.04**	**1.04**	**1.21**	**0.87**	**11%**	**-**
All	22	0.98	0.93	1.21	0.24	29%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

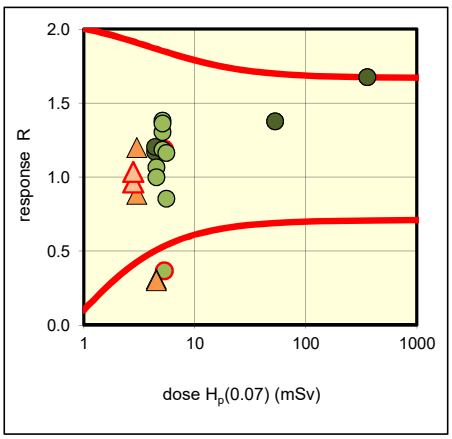
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

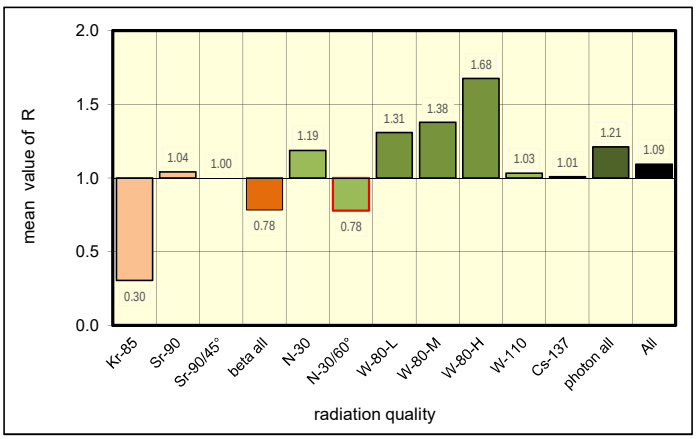
Reporting number 27 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	2	4.51	1.40	**0.31**	outlier
		20	4.51	1.35	**0.30**	outlier
	Sr-90	16	3.00	2.65	**0.88**	OK
		17	3.00	3.60	**1.20**	OK
	Sr-90/45°	3	2.80	2.70	**0.96**	OK
		13	2.80	2.90	**1.04**	OK
photon	N-30	8	4.40	5.15	**1.17**	OK
		9	4.40	5.30	**1.20**	OK
	N-30/60°	29	5.30	1.95	**0.37**	outlier
		30	5.30	6.30	**1.19**	OK
	W-80-L	7	5.10	7.05	**1.38**	OK
		11	5.10	6.65	**1.30**	OK
		14	5.10	6.95	**1.36**	OK
		15	5.10	6.05	**1.19**	OK
	W-80-M	19	53.0	73.00	**1.38**	OK
		24	53.0	73.00	**1.38**	OK
	W-80-H	22	358	600.00	**1.68**	outlier
		23	358	600.00	**1.68**	outlier
	W-110	21	4.50	4.80	**1.07**	OK
		26	4.50	4.50	**1.00**	OK
	Cs-137	1	5.50	6.40	**1.16**	OK
		4	5.50	4.70	**0.85**	OK
	NIR	5				**Legend for Quality**
	NIR	6				L ..... low dose
	NIR	10				M ..... medium dose
	NIR	12				H ..... high dose
	NIR	18				NIR ..... not irradiated
	NIR	25				WIR .... wrongly irradiated
	NIR	27				
	NIR	28				
	NIR	31				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.30	0.30	0.31	0.30	3%	-
Sr-90	2	1.04	1.04	1.20	0.88	21%	Sr-90: 45°/0°
Sr-90/45°	2	1.00	1.00	1.04	0.96	5%	0.96
beta all	**6**	**0.92**	**0.78**	**1.20**	**0.30**	**49%**	**-**
N-30	2	1.19	1.19	1.20	1.17	2%	N-30: 60°/0°
N-30/60°	2	0.78	0.78	1.19	0.37	75%	0.66
W-80-L	4	1.33	1.31	1.38	1.19	7%	W-80: H/L
W-80-M	2	1.38	1.38	1.38	1.38	0%	1.28
W-80-H	2	1.68	1.68	1.68	1.68	0%	
W-110	2	1.03	1.03	1.07	1.00	5%	-
Cs-137	2	1.01	1.01	1.16	0.85	22%	-
photon all	**16**	**1.20**	**1.21**	**1.68**	**0.37**	**26%**	**-**
All	**22**	**1.18**	**1.09**	**1.68**	**0.30**	**35%**	**-**

outliers: 5 of 22 **fraction of outliers: 23%**





Results: $IC2019_{ext\ eye}$

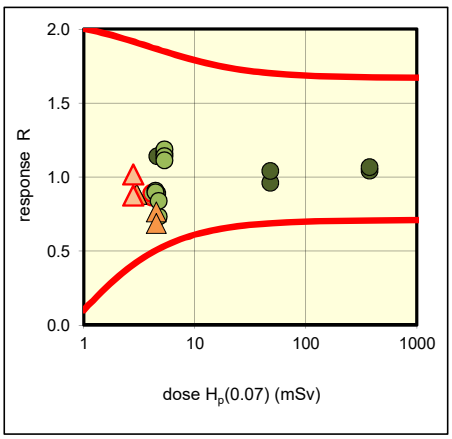
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

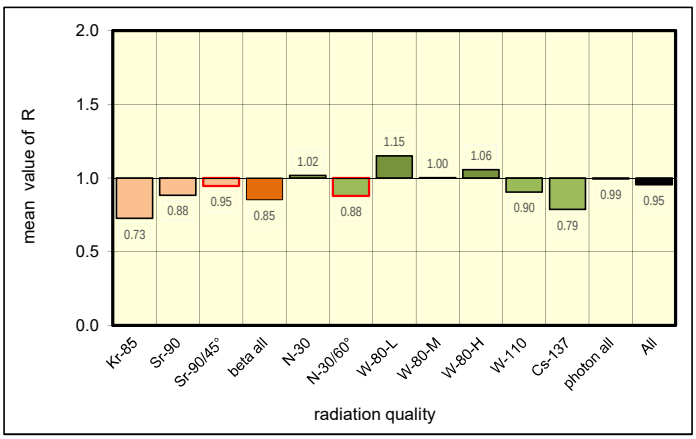
Reporting number 28 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	8	4.51	3.45	**0.76**	OK
		9	4.51	3.10	**0.69**	OK
	Sr-90	10	3.00	2.65	**0.88**	OK
		24	3.00	2.65	**0.88**	OK
	Sr-90/45°	3	2.80	2.45	**0.88**	OK
		23	2.80	2.85	**1.02**	OK
photon	N-30	30	4.60	5.25	**1.14**	OK
		31	4.60	4.10	**0.89**	OK
	N-30/60°	19	4.10	3.55	**0.87**	OK
		20	4.10	3.65	**0.89**	OK
	W-80-L	11	5.30	6.15	**1.16**	OK
		12	5.30	6.30	**1.19**	OK
		26	5.30	6.05	**1.14**	OK
		27	5.30	5.90	**1.11**	OK
	W-80-M	28	48.0	46.20	**0.96**	OK
		29	48.0	50.00	**1.04**	OK
	W-80-H	2	375	391.75	**1.04**	OK
		7	375	400.00	**1.07**	OK
	W-110	13	4.40	4.00	**0.91**	OK
		16	4.40	3.95	**0.90**	OK
	Cs-137	4	4.70	3.45	**0.73**	OK
		5	4.70	3.95	**0.84**	OK
	NIR	1				**Legend for Quality**
	NIR	6				L ..... low dose
	NIR	14				M ..... medium dose
	NIR	15				H ..... high dose
	NIR	17				NIR ..... not irradiated
	NIR	18				WIR .... wrongly irradiated
	NIR	21				
	NIR	22				
	NIR	25				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.73	0.73	0.76	0.69	8%	-
Sr-90	2	0.88	0.88	0.88	0.88	0%	Sr-90: 45°/0°
Sr-90/45°	2	0.95	0.95	1.02	0.88	11%	1.07
beta all	**6**	**0.88**	**0.85**	**1.02**	**0.69**	**13%**	**-**
N-30	2	1.02	1.02	1.14	0.89	17%	N-30: 60°/0°
N-30/60°	2	0.88	0.88	0.89	0.87	2%	0.86
W-80-L	4	1.15	1.15	1.19	1.11	3%	W-80: H/L
W-80-M	2	1.00	1.00	1.04	0.96	6%	0.92
W-80-H	2	1.06	1.06	1.07	1.04	1%	
W-110	2	0.90	0.90	0.91	0.90	1%	-
Cs-137	2	0.79	0.79	0.84	0.73	10%	-
photon all	**16**	**1.00**	**0.99**	**1.19**	**0.73**	**14%**	**-**
All	**22**	**0.90**	**0.95**	**1.19**	**0.69**	**15%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

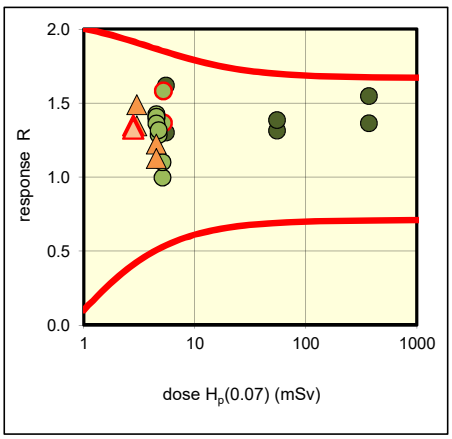
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

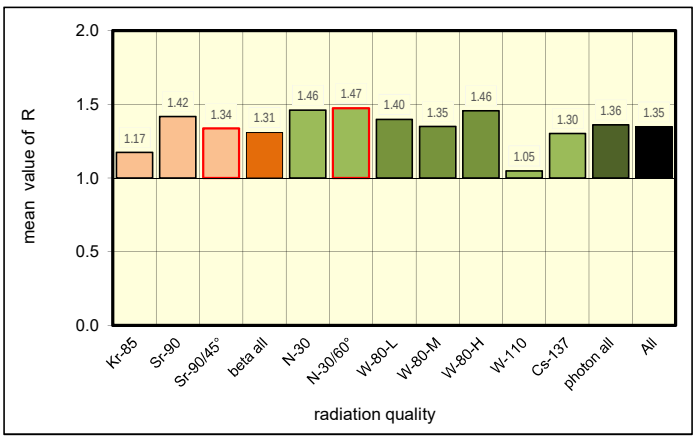
Reporting number 29 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	17	4.51	5.51	**1.22**	OK
		20	4.51	5.08	**1.13**	OK
	Sr-90	7	3.00	4.04	**1.35**	OK
		23	3.00	4.47	**1.49**	OK
	Sr-90/45°	27	2.80	3.77	**1.35**	OK
		32	2.80	3.72	**1.33**	OK
photon	N-30	24	5.50	7.16	**1.30**	OK
		28	5.50	8.90	**1.62**	OK
	N-30/60°	4	5.20	8.23	**1.58**	OK
		29	5.20	7.11	**1.37**	OK
	W-80-L	3	4.50	6.41	**1.43**	OK
		5	4.50	6.29	**1.40**	OK
		16	4.50	6.34	**1.41**	OK
		18	4.50	6.14	**1.36**	OK
	W-80-M	11	55.0	72.23	**1.31**	OK
		12	55.0	76.24	**1.39**	OK
	W-80-H	2	369	503.13	**1.36**	OK
		6	369	571.25	**1.55**	OK
	W-110	21	5.10	5.08	**1.00**	OK
		22	5.10	5.62	**1.10**	OK
	Cs-137	8	4.70	6.04	**1.29**	OK
		10	4.70	6.20	**1.32**	OK
	NIR	1				**Legend for Quality**
	NIR	9				L ..... low dose
	NIR	13				M ..... medium dose
	NIR	14				H ..... high dose
	NIR	15				NIR ..... not irradiated
	NIR	19				WIR .... wrongly irradiated
	NIR	25				
	NIR	26				
	NIR	30				
	NIR	31				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	1.17	1.17	1.22	1.13	6%	-
Sr-90	2	1.42	1.42	1.49	1.35	7%	Sr-90: 45°/0°
Sr-90/45°	2	1.34	1.34	1.35	1.33	1%	0.94
beta all	**6**	**1.34**	**1.31**	**1.49**	**1.13**	**9%**	**-**
N-30	2	1.46	1.46	1.62	1.30	15%	N-30: 60°/0°
N-30/60°	2	1.47	1.47	1.58	1.37	10%	1.01
W-80-L	4	1.40	1.40	1.43	1.36	2%	W-80: H/L
W-80-M	2	1.35	1.35	1.39	1.31	4%	1.04
W-80-H	2	1.46	1.46	1.55	1.36	9%	
W-110	2	1.05	1.05	1.10	1.00	7%	-
Cs-137	2	1.30	1.30	1.32	1.29	2%	-
photon all	**16**	**1.37**	**1.36**	**1.62**	**1.00**	**12%**	**-**
All	**22**	**1.36**	**1.35**	**1.62**	**1.00**	**11%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

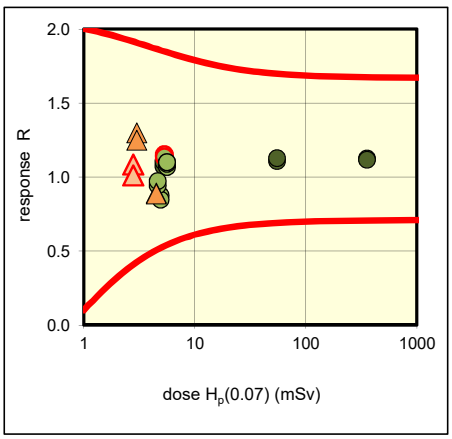
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

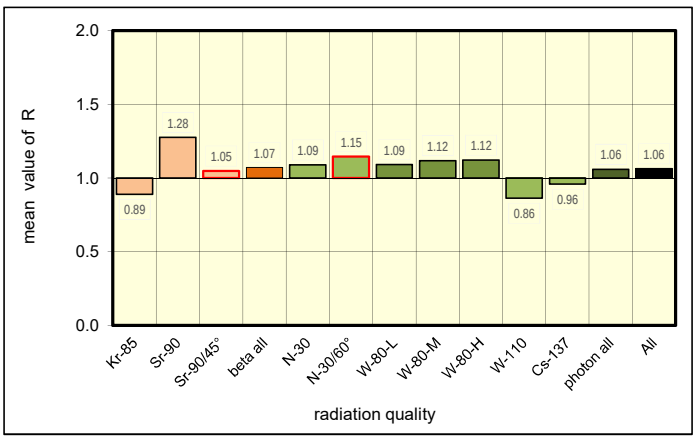
Reporting number 30 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	4	4.51	4.03	**0.89**	OK
		27	4.51	4.00	**0.89**	OK
	Sr-90	3	3.00	3.90	**1.30**	OK
		19	3.00	3.75	**1.25**	OK
	Sr-90/45°	16	2.80	3.04	**1.09**	OK
		32	2.80	2.83	**1.01**	OK
photon	N-30	28	5.20	5.59	**1.08**	OK
		29	5.20	5.74	**1.10**	OK
	N-30/60°	10	5.30	6.11	**1.15**	OK
		12	5.30	6.03	**1.14**	OK
	W-80-L	5	5.60	5.99	**1.07**	OK
		6	5.60	6.11	**1.09**	OK
		14	5.60	6.17	**1.10**	OK
		15	5.60	6.17	**1.10**	OK
	W-80-M	1	55.0	61.00	**1.11**	OK
		2	55.0	62.00	**1.13**	OK
	W-80-H	25	356	400.70	**1.13**	OK
		26	356	397.80	**1.12**	OK
	W-110	23	4.90	4.29	**0.88**	OK
		24	4.90	4.16	**0.85**	OK
	Cs-137	20	4.60	4.34	**0.94**	OK
		21	4.60	4.48	**0.97**	OK
	NIR	7				**Legend for Quality**
	NIR	8				L ……. low dose
	NIR	9				M …… medium dose
	NIR	11				H ……. high dose
	NIR	13				NIR ….. not irradiated
	NIR	17				WIR …. wrongly irradiated
	NIR	18				
	NIR	22				
	NIR	30				
	NIR	31				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.89	0.89	0.89	0.89	1%	-
Sr-90	2	1.28	1.28	1.30	1.25	3%	Sr-90: 45°/0°
Sr-90/45°	2	1.05	1.05	1.09	1.01	5%	0.82
beta all	**6**	**1.05**	**1.07**	**1.30**	**0.89**	**16%**	**-**
N-30	2	1.09	1.09	1.10	1.08	2%	N-30: 60°/0°
N-30/60°	2	1.15	1.15	1.15	1.14	1%	1.05
W-80-L	4	1.10	1.09	1.10	1.07	1%	W-80: H/L
W-80-M	2	1.12	1.12	1.13	1.11	1%	1.03
W-80-H	2	1.12	1.12	1.13	1.12	1%	
W-110	2	0.86	0.86	0.88	0.85	2%	-
Cs-137	2	0.96	0.96	0.97	0.94	2%	-
photon all	**16**	**1.10**	**1.06**	**1.15**	**0.85**	**9%**	**-**
All	**22**	**1.10**	**1.06**	**1.30**	**0.85**	**11%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

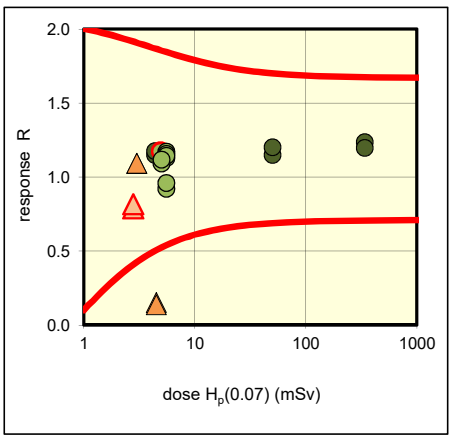
Reporting number 31 : Extremity - photon dosemeter

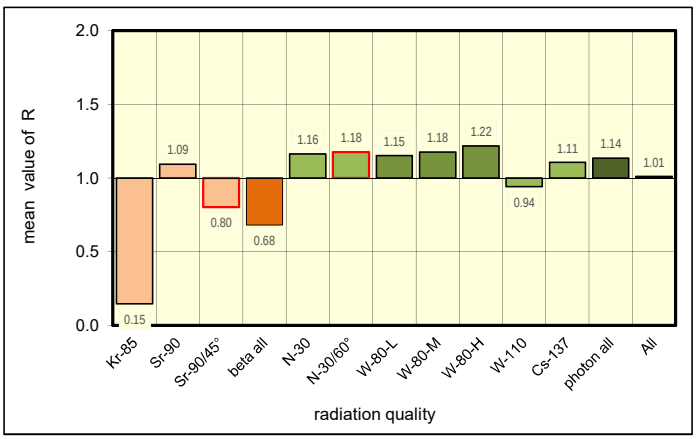
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	17	4.51	0.69	0.15	(outlier)
		25	4.51	0.62	0.14	(outlier)
	Sr-90	10	3.00	3.27	1.09	(OK)
		29	3.00	3.28	1.09	(OK)
	Sr-90/45°	15	2.80	2.21	0.79	(OK)
		19	2.80	2.29	0.82	(OK)
photon	**N-30**	22	4.40	5.06	**1.15**	OK
		23	4.40	5.18	**1.18**	OK
	N-30/60°	4	4.90	5.77	**1.18**	OK
		6	4.90	5.75	**1.17**	OK
	W-80-L	5	5.50	6.45	**1.17**	OK
		7	5.50	6.37	**1.16**	OK
		20	5.50	6.21	**1.13**	OK
		21	5.50	6.30	**1.14**	OK
	W-80-M	8	50.0	57.46	**1.15**	OK
		9	50.0	60.13	**1.20**	OK
	W-80-H	14	340	420.40	**1.24**	OK
		18	340	407.50	**1.20**	OK
	W-110	12	5.50	5.07	**0.92**	OK
		13	5.50	5.28	**0.96**	OK
	Cs-137	1	5.00	5.47	**1.09**	OK
		2	5.00	5.59	**1.12**	OK
	NIR	3				**Legend for Quality**
	NIR	11				L ……. low dose
	NIR	16				M …… medium dose
	NIR	24				H ……. high dose
	NIR	26				NIR ….. not irradiated
	NIR	27				WIR …. wrongly irradiated
	NIR	28				
	NIR	30				
	NIR	31				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.15	0.15	0.15	0.14	7%	-
Sr-90	2	1.09	1.09	1.09	1.09	0%	Sr-90: 45°/0°
Sr-90/45°	2	0.80	0.80	0.82	0.79	2%	0.73
beta all	6	0.80	0.68	1.09	0.14	64%	-
N-30	2	1.16	1.16	1.18	1.15	2%	**N-30: 60°/0°**
N-30/60°	2	1.18	1.18	1.18	1.17	0%	1.01
W-80-L	4	1.15	1.15	1.17	1.13	2%	**W-80: H/L**
W-80-M	2	1.18	1.18	1.20	1.15	3%	1.06
W-80-H	2	1.22	1.22	1.24	1.20	2%	
W-110	2	0.94	0.94	0.96	0.92	3%	-
Cs-137	2	1.11	1.11	1.12	1.09	2%	-
photon all	**16**	**1.15**	**1.14**	**1.24**	**0.92**	**7%**	**-**
All	22	1.14	1.01	1.24	0.14	30%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

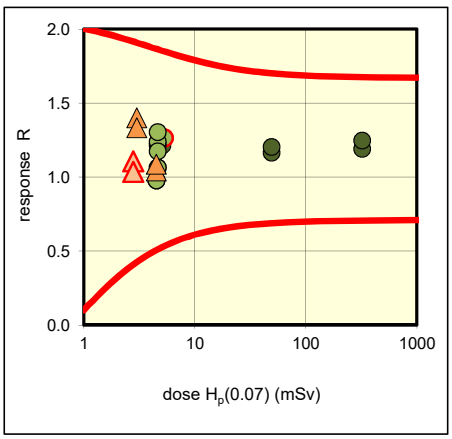
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

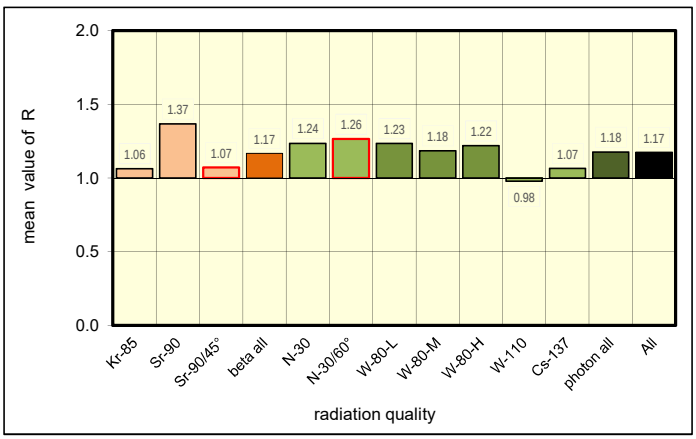
Reporting number 32 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	25	4.51	4.70	**1.04**	OK
		27	4.51	4.90	**1.09**	OK
	Sr-90	22	3.00	4.20	**1.40**	OK
		31	3.00	4.00	**1.33**	OK
	Sr-90/45°	21	2.80	3.10	**1.11**	OK
		28	2.80	2.90	**1.04**	OK
photon	N-30	24	5.10	6.40	**1.25**	OK
		29	5.10	6.20	**1.22**	OK
	N-30/60°	4	5.30	6.70	**1.26**	OK
		5	5.30	6.70	**1.26**	OK
	W-80-L	9	4.60	5.60	**1.22**	OK
		10	4.60	5.70	**1.24**	OK
		11	4.60	5.40	**1.17**	OK
		15	4.60	6.00	**1.30**	OK
	W-80-M	2	49.0	57.10	**1.17**	OK
		3	49.0	59.00	**1.20**	OK
	W-80-H	13	321	382.00	**1.19**	OK
		14	321	400.30	**1.25**	OK
	W-110	30	4.50	4.40	**0.98**	OK
		32	4.50	4.40	**0.98**	OK
	Cs-137	16	4.60	4.90	**1.07**	OK
		17	4.60	4.90	**1.07**	OK
	NIR	1				**Legend for Quality**
	NIR	6				L ……. low dose
	NIR	7				M …… medium dose
	NIR	8				H ……. high dose
	NIR	12				NIR ….. not irradiated
	NIR	18				WIR …. wrongly irradiated
	NIR	19				
	NIR	20				
	NIR	23				
	NIR	26				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	1.06	1.06	1.09	1.04	3%	-
Sr-90	2	1.37	1.37	1.40	1.33	3%	Sr-90: 45°/0°
Sr-90/45°	2	1.07	1.07	1.11	1.04	5%	0.78
beta all	**6**	**1.10**	**1.17**	**1.40**	**1.04**	**14%**	**-**
N-30	2	1.24	1.24	1.25	1.22	2%	N-30: 60°/0°
N-30/60°	2	1.26	1.26	1.26	1.26	0%	1.02
W-80-L	4	1.23	1.23	1.30	1.17	4%	W-80: H/L
W-80-M	2	1.18	1.18	1.20	1.17	2%	0.99
W-80-H	2	1.22	1.22	1.25	1.19	3%	
W-110	2	0.98	0.98	0.98	0.98	0%	-
Cs-137	2	1.07	1.07	1.07	1.07	0%	-
photon all	**16**	**1.21**	**1.18**	**1.30**	**0.98**	**9%**	**-**
All	**22**	**1.20**	**1.17**	**1.40**	**0.98**	**10%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

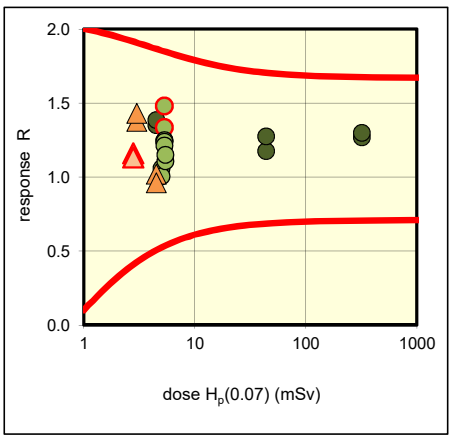
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

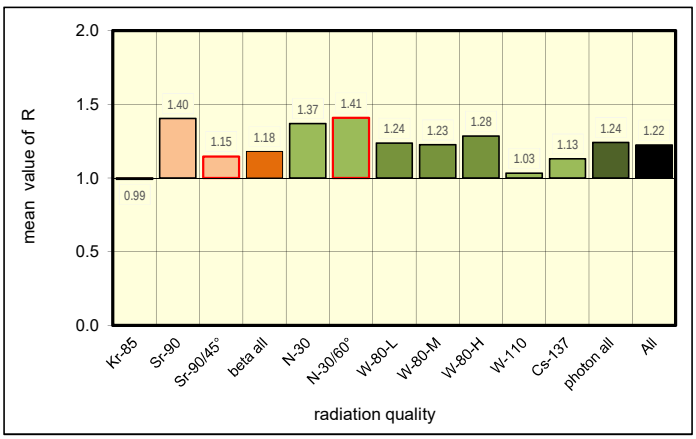
Reporting number 33 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	22	4.51	4.60	**1.02**	OK
		28	4.51	4.34	**0.96**	OK
	Sr-90	12	3.00	4.13	**1.38**	OK
		20	3.00	4.29	**1.43**	OK
	Sr-90/45°	26	2.80	3.25	**1.16**	OK
		31	2.80	3.17	**1.13**	OK
photon	N-30	23	4.50	6.08	**1.35**	OK
		24	4.50	6.24	**1.39**	OK
	N-30/60°	1	5.30	7.08	**1.34**	OK
		3	5.30	7.85	**1.48**	OK
	W-80-L	2	5.30	6.59	**1.24**	OK
		4	5.30	6.63	**1.25**	OK
		8	5.30	6.57	**1.24**	OK
		10	5.30	6.43	**1.21**	OK
	W-80-M	25	44.0	51.70	**1.18**	OK
		27	44.0	56.10	**1.28**	OK
	W-80-H	14	320	406.00	**1.27**	OK
		16	320	416.00	**1.30**	OK
	W-110	13	5.00	5.30	**1.06**	OK
		15	5.00	5.03	**1.01**	OK
	Cs-137	5	5.40	5.98	**1.11**	OK
		6	5.40	6.22	**1.15**	OK
	NIR	7				**Legend for Quality**
	NIR	9				L ……. low dose
	NIR	11				M …… medium dose
	NIR	17				H ……. high dose
	NIR	18				NIR ….. not irradiated
	NIR	19				WIR …. wrongly irradiated
	NIR	21				
	NIR	29				
	NIR	30				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.99	0.99	1.02	0.96	4%	-
Sr-90	2	1.40	1.40	1.43	1.38	3%	Sr-90: 45°/0°
Sr-90/45°	2	1.15	1.15	1.16	1.13	2%	0.82
beta all	**6**	**1.15**	**1.18**	**1.43**	**0.96**	**16%**	**-**
N-30	2	1.37	1.37	1.39	1.35	2%	N-30: 60°/0°
N-30/60°	2	1.41	1.41	1.48	1.34	7%	1.03
W-80-L	4	1.24	1.24	1.25	1.21	1%	W-80: H/L
W-80-M	2	1.23	1.23	1.28	1.18	6%	1.04
W-80-H	2	1.28	1.28	1.30	1.27	2%	
W-110	2	1.03	1.03	1.06	1.01	4%	-
Cs-137	2	1.13	1.13	1.15	1.11	3%	-
photon all	**16**	**1.25**	**1.24**	**1.48**	**1.01**	**10%**	**-**
All	**22**	**1.24**	**1.22**	**1.48**	**0.96**	**12%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

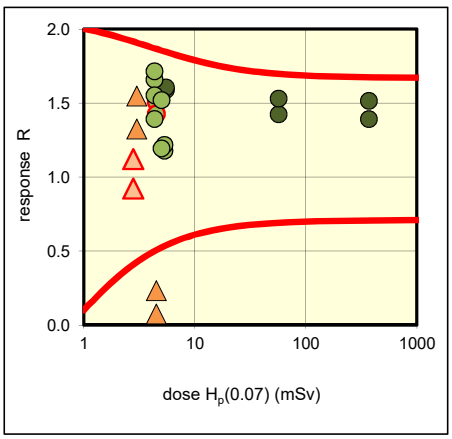
Reporting number 34 : Extremity - photon dosemeter

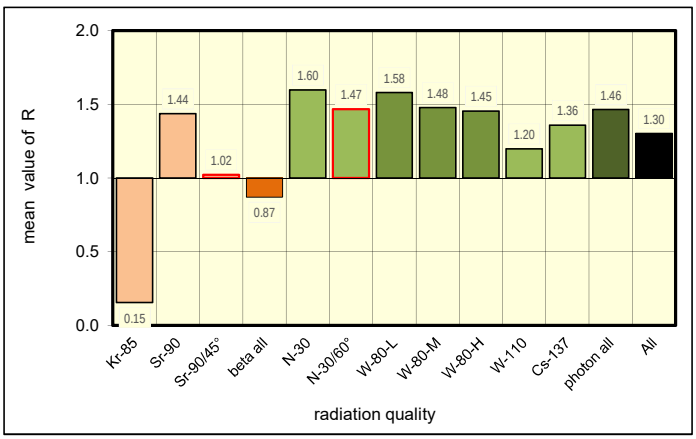
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	13	4.51	0.34	0.07	(outlier)
		16	4.51	1.05	0.23	(outlier)
	Sr-90	10	3.00	4.64	1.55	(OK)
		28	3.00	3.97	1.32	(OK)
	Sr-90/45°	4	2.80	2.58	0.92	(OK)
		15	2.80	3.14	1.12	(OK)
photon	**N-30**	2	5.50	8.74	**1.59**	OK
		3	5.50	8.83	**1.61**	OK
	N-30/60°	7	4.50	6.79	**1.51**	OK
		8	4.50	6.42	**1.43**	OK
	W-80-L	9	4.30	7.13	**1.66**	OK
		11	4.30	5.99	**1.39**	OK
		20	4.30	6.68	**1.55**	OK
		25	4.30	7.38	**1.72**	OK
	W-80-M	17	57.0	81.22	**1.42**	OK
		19	57.0	87.23	**1.53**	OK
	W-80-H	22	369	559.08	**1.52**	OK
		23	369	513.95	**1.39**	OK
	W-110	27	5.30	6.24	**1.18**	OK
		32	5.30	6.45	**1.22**	OK
	Cs-137	5	5.00	5.98	**1.20**	OK
		6	5.00	7.61	**1.52**	OK
	NIR	1				**Legend for Quality**
	NIR	12				L ……. low dose
	NIR	14				M …… medium dose
	NIR	18				H ……. high dose
	NIR	21				NIR ….. not irradiated
	NIR	24				WIR …. wrongly irradiated
	NIR	26				
	NIR	29				
	NIR	30				
	NIR	31				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.15	0.15	0.23	0.07	73%	-
Sr-90	2	1.44	1.44	1.55	1.32	11%	Sr-90: 45°/0°
Sr-90/45°	2	1.02	1.02	1.12	0.92	14%	0.71
beta all	6	1.02	0.87	1.55	0.07	68%	-
N-30	2	1.60	1.60	1.61	1.59	1%	**N-30: 60°/0°**
N-30/60°	2	1.47	1.47	1.51	1.43	4%	0.92
W-80-L	4	1.61	1.58	1.72	1.39	9%	**W-80: H/L**
W-80-M	2	1.48	1.48	1.53	1.42	5%	0.92
W-80-H	2	1.45	1.45	1.52	1.39	6%	
W-110	2	1.20	1.20	1.22	1.18	2%	-
Cs-137	2	1.36	1.36	1.52	1.20	17%	-
photon all	**16**	**1.51**	**1.46**	**1.72**	**1.18**	**11%**	**-**
All	22	1.43	1.30	1.72	0.07	32%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

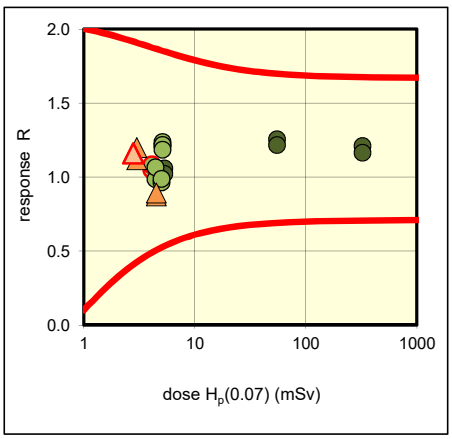
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

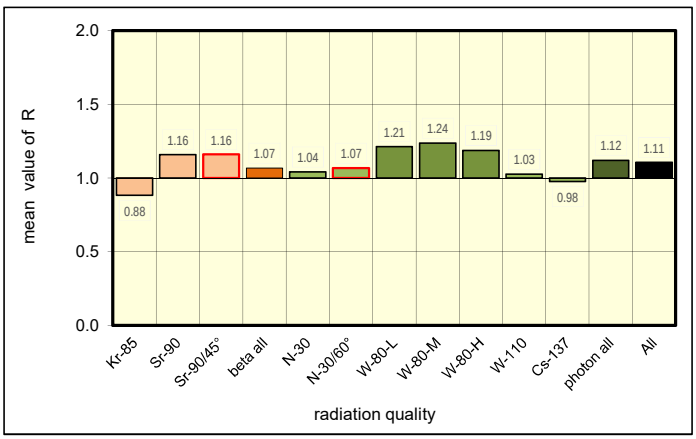
Reporting number 35 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	7	4.51	3.94	**0.87**	OK
		31	4.51	4.02	**0.89**	OK
	Sr-90	10	3.00	3.60	**1.20**	OK
		13	3.00	3.35	**1.12**	OK
	Sr-90/45°	2	2.80	3.25	**1.16**	OK
		8	2.80	3.25	**1.16**	OK
photon	N-30	27	5.30	5.61	**1.06**	OK
		28	5.30	5.42	**1.02**	OK
	N-30/60°	12	4.10	4.31	**1.05**	OK
		14	4.10	4.44	**1.08**	OK
	W-80-L	17	5.10	6.31	**1.24**	OK
		19	5.10	6.18	**1.21**	OK
		26	5.10	6.21	**1.22**	OK
		32	5.10	6.05	**1.19**	OK
	W-80-M	20	55.0	69.13	**1.26**	OK
		22	55.0	66.90	**1.22**	OK
	W-80-H	24	324	392.44	**1.21**	OK
		25	324	377.20	**1.16**	OK
	W-110	29	4.40	4.34	**0.99**	OK
		30	4.40	4.69	**1.07**	OK
	Cs-137	4	5.00	4.82	**0.96**	OK
		6	5.00	4.94	**0.99**	OK
	NIR	1				**Legend for Quality**
	NIR	3				L ……. low dose
	NIR	5				M …… medium dose
	NIR	9				H ……. high dose
	NIR	15				NIR ….. not irradiated
	NIR	16				WIR …. wrongly irradiated
	NIR	18				
	NIR	23				
	WIR	11				
	WIR	21				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.88	0.88	0.89	0.87	1%	-
Sr-90	2	1.16	1.16	1.20	1.12	5%	Sr-90: 45°/0°
Sr-90/45°	2	1.16	1.16	1.16	1.16	0%	1.00
beta all	**6**	**1.14**	**1.07**	**1.20**	**0.87**	**14%**	**-**
N-30	2	1.04	1.04	1.06	1.02	2%	N-30: 60°/0°
N-30/60°	2	1.07	1.07	1.08	1.05	2%	1.03
W-80-L	4	1.21	1.21	1.24	1.19	2%	W-80: H/L
W-80-M	2	1.24	1.24	1.26	1.22	2%	0.98
W-80-H	2	1.19	1.19	1.21	1.16	3%	
W-110	2	1.03	1.03	1.07	0.99	5%	-
Cs-137	2	0.98	0.98	0.99	0.96	2%	-
photon all	**16**	**1.12**	**1.12**	**1.26**	**0.96**	**9%**	**-**
All	**22**	**1.14**	**1.11**	**1.26**	**0.87**	**10%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

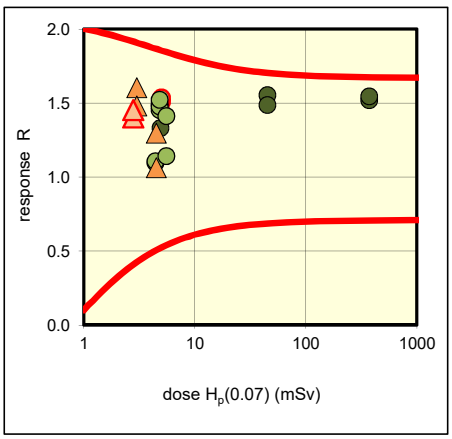
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

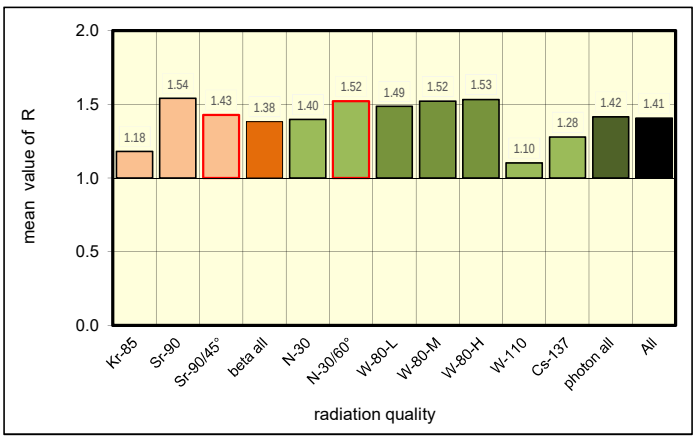
Reporting number 36 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	3	4.51	5.85	**1.30**	OK
		28	4.51	4.79	**1.06**	OK
	Sr-90	13	3.00	4.81	**1.60**	OK
		27	3.00	4.44	**1.48**	OK
	Sr-90/45°	17	2.80	3.93	**1.40**	OK
		20	2.80	4.07	**1.45**	OK
photon	N-30	16	4.90	7.17	**1.46**	OK
		18	4.90	6.52	**1.33**	OK
	N-30/60°	8	5.00	7.54	**1.51**	OK
		11	5.00	7.67	**1.53**	OK
	W-80-L	9	4.80	6.98	**1.45**	OK
		10	4.80	7.15	**1.49**	OK
		21	4.80	7.09	**1.48**	OK
		22	4.80	7.31	**1.52**	OK
	W-80-M	12	45.0	69.93	**1.55**	OK
		15	45.0	66.93	**1.49**	OK
	W-80-H	31	373	566.93	**1.52**	OK
		32	373	576.93	**1.55**	OK
	W-110	5	4.40	4.83	**1.10**	OK
		7	4.40	4.87	**1.11**	OK
	Cs-137	2	5.50	6.28	**1.14**	OK
		4	5.50	7.77	**1.41**	OK
	NIR	1				**Legend for Quality**
	NIR	6				L ……. low dose
	NIR	14				M …… medium dose
	NIR	19				H ……. high dose
	NIR	23				NIR ….. not irradiated
	NIR	24				WIR …. wrongly irradiated
	NIR	25				
	NIR	26				
	NIR	29				
	NIR	30				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	1.18	1.18	1.30	1.06	14%	-
Sr-90	2	1.54	1.54	1.60	1.48	6%	Sr-90: 45°/0°
Sr-90/45°	2	1.43	1.43	1.45	1.40	2%	0.93
beta all	**6**	**1.43**	**1.38**	**1.60**	**1.06**	**13%**	**-**
N-30	2	1.40	1.40	1.46	1.33	7%	N-30: 60°/0°
N-30/60°	2	1.52	1.52	1.53	1.51	1%	1.09
W-80-L	4	1.48	1.49	1.52	1.45	2%	W-80: H/L
W-80-M	2	1.52	1.52	1.55	1.49	3%	1.03
W-80-H	2	1.53	1.53	1.55	1.52	1%	
W-110	2	1.10	1.10	1.11	1.10	1%	-
Cs-137	2	1.28	1.28	1.41	1.14	15%	-
photon all	**16**	**1.48**	**1.42**	**1.55**	**1.10**	**11%**	**-**
All	**22**	**1.47**	**1.41**	**1.60**	**1.06**	**12%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

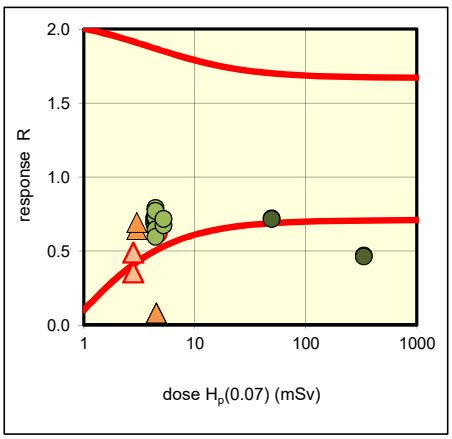
Reporting number 37 : Extremity - photon dosemeter

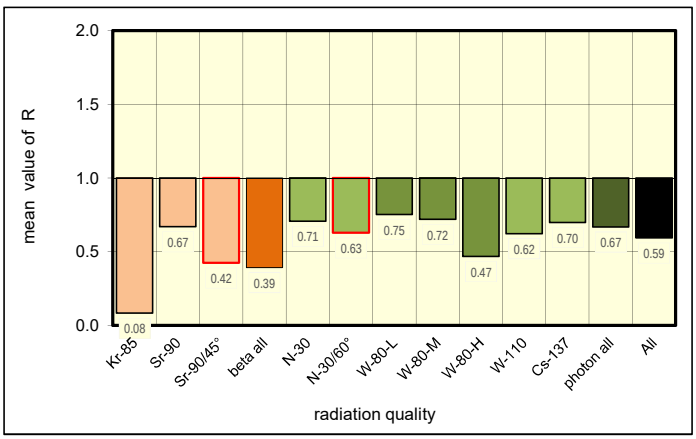
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	2	4.51	0.38	0.08	(outlier)
		5	4.51	0.37	0.08	(outlier)
	Sr-90	6	3.00	1.94	0.65	(OK)
		14	3.00	2.08	0.69	(OK)
	Sr-90/45°	3	2.80	1.37	0.49	(OK)
		18	2.80	1.00	0.36	(outlier)
photon	N-30	22	4.30	2.97	**0.69**	OK
		23	4.30	3.11	**0.72**	OK
	N-30/60°	31	4.70	3.00	**0.64**	OK
		32	4.70	2.91	**0.62**	OK
	W-80-L	1	4.40	3.15	**0.72**	OK
		4	4.40	3.20	**0.73**	OK
		16	4.40	3.48	**0.79**	OK
		19	4.40	3.40	**0.77**	OK
	W-80-M	29	49.0	35.40	**0.72**	OK
		30	49.0	35.10	**0.72**	OK
	W-80-H	10	332	156.00	**0.47**	outlier
		11	332	154.00	**0.46**	outlier
	W-110	8	4.40	2.85	**0.65**	OK
		9	4.40	2.63	**0.60**	OK
	Cs-137	26	5.20	3.51	**0.68**	OK
		27	5.20	3.74	**0.72**	OK
	NIR	7				**Legend for Quality**
	NIR	12				L ……. low dose
	NIR	13				M …… medium dose
	NIR	15				H ……. high dose
	NIR	17				NIR ….. not irradiated
	NIR	20				WIR …. wrongly irradiated
	NIR	21				
	NIR	24				
	NIR	25				
	NIR	28				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.08	0.08	0.08	0.08	2%	-
Sr-90	2	0.67	0.67	0.69	0.65	5%	Sr-90: 45°/0°
Sr-90/45°	2	0.42	0.42	0.49	0.36	22%	0.63
beta all	6	0.42	0.39	0.69	0.08	68%	-
N-30	2	0.71	0.71	0.72	0.69	3%	**N-30: 60°/0°**
N-30/60°	2	0.63	0.63	0.64	0.62	2%	0.89
W-80-L	4	0.75	0.75	0.79	0.72	5%	**W-80: H/L**
W-80-M	2	0.72	0.72	0.72	0.72	1%	0.62
W-80-H	2	0.47	0.47	0.47	0.46	1%	
W-110	2	0.62	0.62	0.65	0.60	6%	-
Cs-137	2	0.70	0.70	0.72	0.68	4%	-
photon all	**16**	**0.70**	**0.67**	**0.79**	**0.46**	**14%**	**-**
All	22	0.66	0.59	0.79	0.08	33%	-

outliers: 2 of 16 **fraction of outliers: 13%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

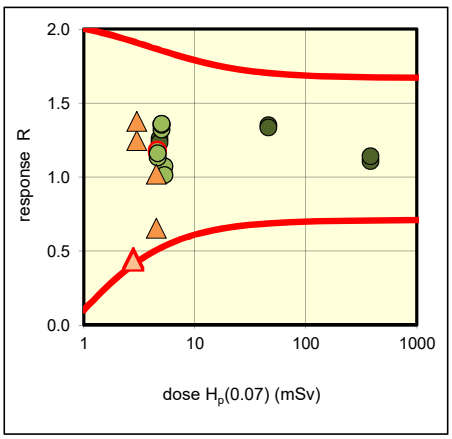
Reporting number 38 : Extremity - photon dosemeter

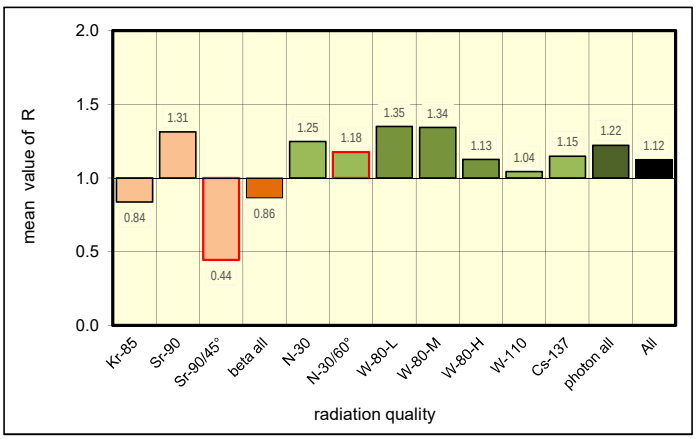
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	7	4.51	4.60	1.02	(OK)
		17	4.51	2.95	0.65	(OK)
	Sr-90	4	3.00	3.74	1.25	(OK)
		30	3.00	4.13	1.38	(OK)
	Sr-90/45°	22	2.80	1.27	0.45	(OK)
		24	2.80	1.22	0.44	(OK)
photon	N-30	8	4.80	6.05	**1.26**	OK
		9	4.80	5.93	**1.23**	OK
	N-30/60°	18	4.60	5.38	**1.17**	OK
		20	4.60	5.44	**1.18**	OK
	W-80-L	1	5.00	6.61	**1.32**	OK
		6	5.00	6.80	**1.36**	OK
		11	5.00	6.77	**1.35**	OK
		16	5.00	6.80	**1.36**	OK
	W-80-M	23	46.0	62.16	**1.35**	OK
		25	46.0	61.41	**1.34**	OK
	W-80-H	31	382	423.88	**1.11**	OK
		32	382	436.05	**1.14**	OK
	W-110	26	5.30	5.69	**1.07**	OK
		28	5.30	5.38	**1.01**	OK
	Cs-137	14	4.60	5.21	**1.13**	OK
		15	4.60	5.34	**1.16**	OK
	NIR	2				**Legend for Quality**
	NIR	3				L ..... low dose
	NIR	5				M ..... medium dose
	NIR	10				H ..... high dose
	NIR	12				NIR ..... not irradiated
	NIR	13				WIR .... wrongly irradiated
	NIR	19				
	NIR	21				
	NIR	27				
	NIR	29				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.84	0.84	1.02	0.65	31%	-
Sr-90	2	1.31	1.31	1.38	1.25	7%	Sr-90: 45°/0°
Sr-90/45°	2	0.44	0.44	0.45	0.44	3%	0.34
beta all	6	0.84	0.86	1.38	0.44	47%	-
N-30	2	1.25	1.25	1.26	1.23	1%	**N-30: 60°/0°**
N-30/60°	2	1.18	1.18	1.18	1.17	1%	0.94
W-80-L	4	1.36	1.35	1.36	1.32	1%	**W-80: H/L**
W-80-M	2	1.34	1.34	1.35	1.34	1%	0.83
W-80-H	2	1.13	1.13	1.14	1.11	2%	
W-110	2	1.04	1.04	1.07	1.01	4%	-
Cs-137	2	1.15	1.15	1.16	1.13	2%	-
photon all	**16**	**1.21**	**1.22**	**1.36**	**1.01**	**9%**	**-**
All	22	1.18	1.12	1.38	0.44	24%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

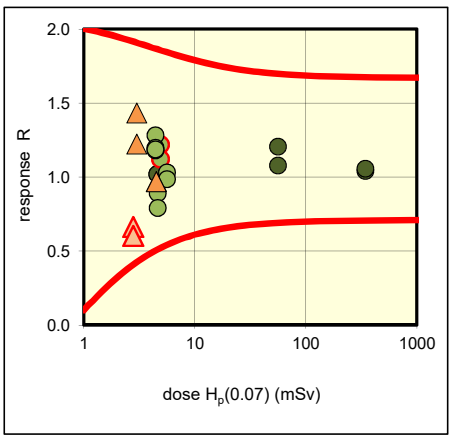
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

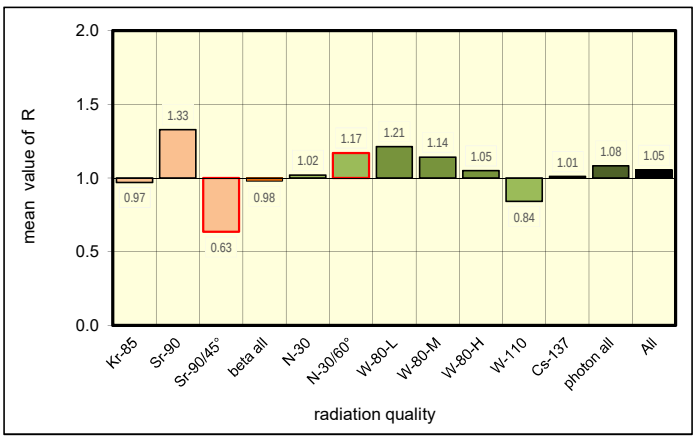
Reporting number 39 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	14	4.51	4.38	**0.97**	OK
		28	4.51	4.37	**0.97**	OK
	Sr-90	16	3.00	4.30	**1.43**	OK
		25	3.00	3.67	**1.22**	OK
	Sr-90/45°	3	2.80	1.86	**0.66**	OK
		15	2.80	1.69	**0.60**	OK
photon	N-30	8	4.60	4.69	**1.02**	OK
		10	4.60	4.69	**1.02**	OK
	N-30/60°	1	4.90	5.97	**1.22**	OK
		4	4.90	5.50	**1.12**	OK
	W-80-L	2	4.40	5.64	**1.28**	OK
		5	4.40	5.20	**1.18**	OK
		7	4.40	5.27	**1.20**	OK
		9	4.40	5.23	**1.19**	OK
	W-80-M	22	56.0	67.54	**1.21**	OK
		24	56.0	60.36	**1.08**	OK
	W-80-H	29	345	359.24	**1.04**	OK
		30	345	364.49	**1.06**	OK
	W-110	19	4.60	4.10	**0.89**	OK
		23	4.60	3.64	**0.79**	OK
	Cs-137	12	5.60	5.78	**1.03**	OK
		17	5.60	5.53	**0.99**	OK
	NIR	6				**Legend for Quality**
	NIR	11				L ……. low dose
	NIR	13				M …… medium dose
	NIR	18				H ……. high dose
	NIR	20				NIR ….. not irradiated
	NIR	21				WIR …. wrongly irradiated
	NIR	26				
	NIR	27				
	NIR	31				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.97	0.97	0.97	0.97	0%	-
Sr-90	2	1.33	1.33	1.43	1.22	11%	Sr-90: 45°/0°
Sr-90/45°	2	0.63	0.63	0.66	0.60	7%	0.48
beta all	**6**	**0.97**	**0.98**	**1.43**	**0.60**	**33%**	**-**
N-30	2	1.02	1.02	1.02	1.02	0%	N-30: 60°/0°
N-30/60°	2	1.17	1.17	1.22	1.12	6%	1.15
W-80-L	4	1.19	1.21	1.28	1.18	4%	W-80: H/L
W-80-M	2	1.14	1.14	1.21	1.08	8%	0.87
W-80-H	2	1.05	1.05	1.06	1.04	1%	
W-110	2	0.84	0.84	0.89	0.79	8%	-
Cs-137	2	1.01	1.01	1.03	0.99	3%	-
photon all	**16**	**1.07**	**1.08**	**1.28**	**0.79**	**12%**	**-**
All	**22**	**1.05**	**1.05**	**1.43**	**0.60**	**19%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

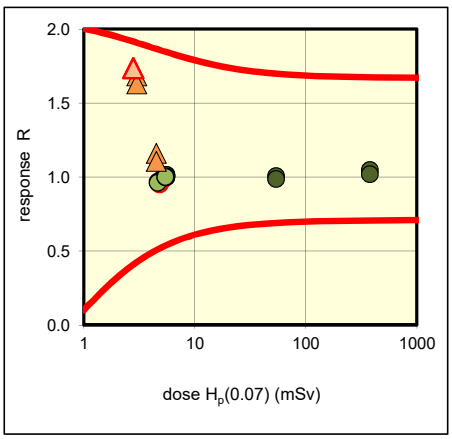
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

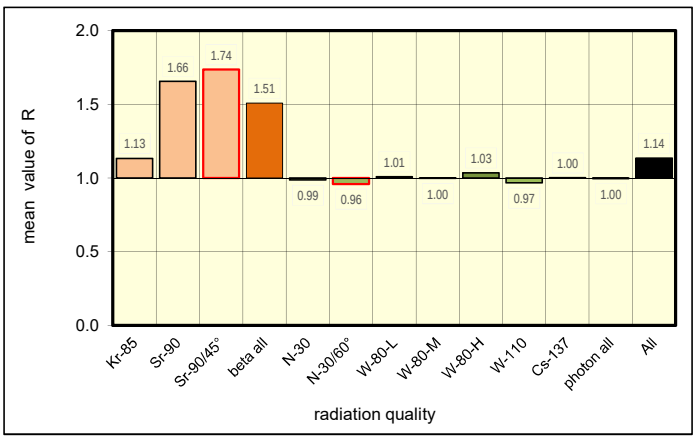
Reporting number 40 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	25	4.51	5.23	**1.16**	OK
		28	4.51	4.99	**1.11**	OK
	Sr-90	6	3.00	5.05	**1.68**	OK
		29	3.00	4.89	**1.63**	OK
	Sr-90/45°	12	2.80	4.86	**1.74**	OK
		21	2.80	4.86	**1.74**	OK
photon	N-30	10	5.00	4.93	**0.99**	OK
		11	5.00	4.93	**0.99**	OK
	N-30/60°	18	4.80	4.62	**0.96**	OK
		19	4.80	4.59	**0.96**	OK
	W-80-L	20	5.50	5.58	**1.01**	OK
		22	5.50	5.58	**1.01**	OK
		23	5.50	5.50	**1.00**	OK
		26	5.50	5.53	**1.01**	OK
	W-80-M	30	54.0	54.33	**1.01**	OK
		31	54.0	53.32	**0.99**	OK
	W-80-H	13	378	395.90	**1.05**	OK
		14	378	385.90	**1.02**	OK
	W-110	3	4.60	4.46	**0.97**	OK
		9	4.60	4.43	**0.96**	OK
	Cs-137	5	5.40	5.40	**1.00**	OK
		7	5.40	5.41	**1.00**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	4				M …… medium dose
	NIR	8				H ……. high dose
	NIR	15				NIR ….. not irradiated
	NIR	16				WIR …. wrongly irradiated
	NIR	17				
	NIR	24				
	NIR	27				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	1.13	1.13	1.16	1.11	3%	-
Sr-90	2	1.66	1.66	1.68	1.63	2%	Sr-90: 45°/0°
Sr-90/45°	2	1.74	1.74	1.74	1.74	0%	1.05
beta all	**6**	**1.66**	**1.51**	**1.74**	**1.11**	**19%**	**-**
N-30	2	0.99	0.99	0.99	0.99	0%	N-30: 60°/0°
N-30/60°	2	0.96	0.96	0.96	0.96	0%	0.97
W-80-L	4	1.01	1.01	1.01	1.00	1%	W-80: H/L
W-80-M	2	1.00	1.00	1.01	0.99	1%	1.03
W-80-H	2	1.03	1.03	1.05	1.02	2%	
W-110	2	0.97	0.97	0.97	0.96	0%	-
Cs-137	2	1.00	1.00	1.00	1.00	0%	-
photon all	**16**	**1.00**	**1.00**	**1.05**	**0.96**	**2%**	**-**
All	**22**	**1.01**	**1.14**	**1.74**	**0.96**	**24%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

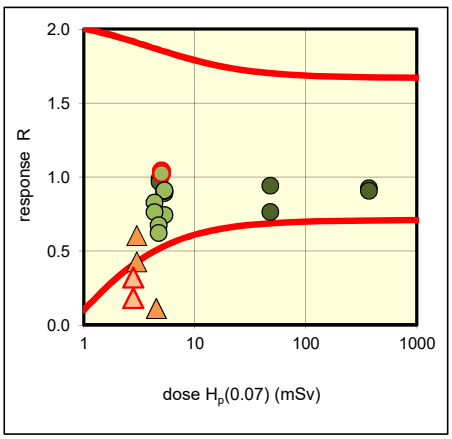
Reporting number 41 : Extremity - photon dosemeter

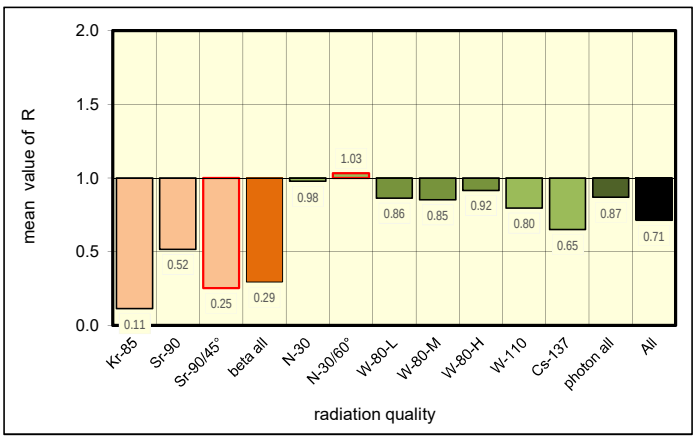
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	17	4.51	0.51	0.11	(outlier)
		29	4.51	0.51	0.11	(outlier)
	Sr-90	4	3.00	1.28	0.43	(OK)
		10	3.00	1.81	0.60	(OK)
	Sr-90/45°	2	2.80	0.51	0.18	(outlier)
		15	2.80	0.90	0.32	(outlier)
photon	N-30	1	4.80	4.74	**0.99**	OK
		7	4.80	4.65	**0.97**	OK
	N-30/60°	11	5.00	5.21	**1.04**	OK
		12	5.00	5.13	**1.03**	OK
	W-80-L	6	5.30	4.74	**0.89**	OK
		8	5.30	4.80	**0.91**	OK
		19	5.30	4.83	**0.91**	OK
		20	5.30	3.95	**0.74**	OK
	W-80-M	23	48.0	45.18	**0.94**	OK
		24	48.0	36.70	**0.76**	OK
	W-80-H	22	369	341.21	**0.92**	OK
		26	369	334.69	**0.91**	OK
	W-110	13	4.30	3.57	**0.83**	OK
		14	4.30	3.28	**0.76**	OK
	Cs-137	27	4.70	3.17	**0.68**	OK
		28	4.70	2.93	**0.62**	OK
	NIR	3				**Legend for Quality**
	NIR	5				L ..... low dose
	NIR	9				M ..... medium dose
	NIR	16				H ..... high dose
	NIR	18				NIR ..... not irradiated
	NIR	21				WIR .... wrongly irradiated
	NIR	25				
	NIR	30				
	NIR	31				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.11	0.11	0.11	0.11	0%	-
Sr-90	2	0.52	0.52	0.60	0.43	24%	Sr-90: 45°/0°
Sr-90/45°	2	0.25	0.25	0.32	0.18	39%	0.49
beta all	6	0.25	0.29	0.60	0.11	67%	-
N-30	2	0.98	0.98	0.99	0.97	1%	**N-30: 60°/0°**
N-30/60°	2	1.03	1.03	1.04	1.03	1%	1.06
W-80-L	4	0.90	0.86	0.91	0.74	9%	**W-80: H/L**
W-80-M	2	0.85	0.85	0.94	0.76	15%	1.06
W-80-H	2	0.92	0.92	0.92	0.91	1%	
W-110	2	0.80	0.80	0.83	0.76	6%	-
Cs-137	2	0.65	0.65	0.68	0.62	6%	-
photon all	**16**	**0.91**	**0.87**	**1.04**	**0.62**	**14%**	**-**
All	22	0.80	0.71	1.04	0.11	42%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

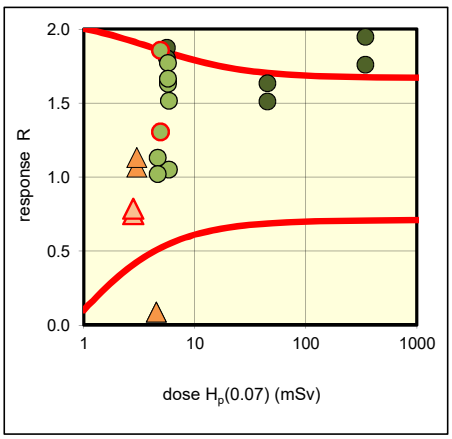
Reporting number 42 : Extremity - photon dosemeter

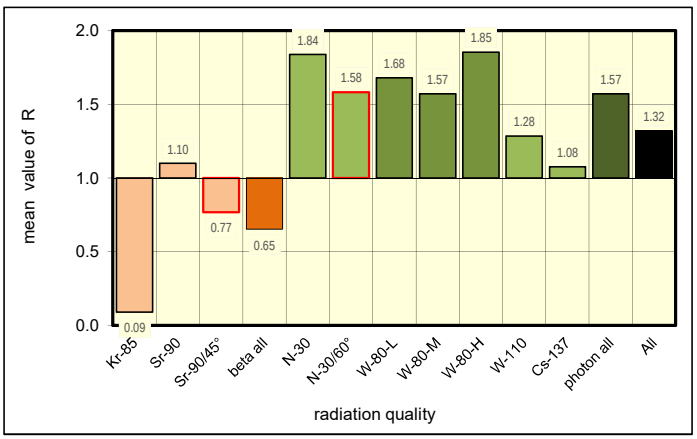
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	18	4.51	0.40	0.09	(outlier)
		24	4.51	0.40	0.09	(outlier)
	Sr-90	12	3.00	3.20	1.07	(OK)
		25	3.00	3.40	1.13	(OK)
	Sr-90/45°	15	2.80	2.10	0.75	(OK)
		32	2.80	2.20	0.79	(OK)
photon	N-30	21	5.60	10.50	**1.88**	outlier
		27	5.60	10.10	**1.80**	OK
	N-30/60°	16	4.90	9.10	**1.86**	OK
		17	4.90	6.40	**1.31**	OK
	W-80-L	7	5.70	9.40	**1.65**	OK
		9	5.70	10.10	**1.77**	OK
		28	5.70	9.30	**1.63**	OK
		29	5.70	9.50	**1.67**	OK
	W-80-M	30	45.0	73.50	**1.63**	OK
		31	45.0	68.00	**1.51**	OK
	W-80-H	11	344	605.50	**1.76**	outlier
		19	344	670.00	**1.95**	outlier
	W-110	2	5.80	6.10	**1.05**	OK
		8	5.80	8.80	**1.52**	OK
	Cs-137	3	4.60	5.20	**1.13**	OK
		4	4.60	4.70	**1.02**	OK
	NIR	1				**Legend for Quality**
	NIR	5				L ……. low dose
	NIR	6				M …… medium dose
	NIR	10				H ……. high dose
	NIR	13				NIR ….. not irradiated
	NIR	14				WIR …. wrongly irradiated
	NIR	20				
	NIR	22				
	NIR	23				
	NIR	26				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.09	0.09	0.09	0.09	0%	-
Sr-90	2	1.10	1.10	1.13	1.07	4%	Sr-90: 45°/0°
Sr-90/45°	2	0.77	0.77	0.79	0.75	3%	0.70
beta all	6	0.77	0.65	1.13	0.09	71%	-
N-30	2	1.84	1.84	1.88	1.80	3%	**N-30: 60°/0°**
N-30/60°	2	1.58	1.58	1.86	1.31	25%	0.86
W-80-L	4	1.66	1.68	1.77	1.63	4%	**W-80: H/L**
W-80-M	2	1.57	1.57	1.63	1.51	5%	1.10
W-80-H	2	1.85	1.85	1.95	1.76	7%	
W-110	2	1.28	1.28	1.52	1.05	26%	-
Cs-137	2	1.08	1.08	1.13	1.02	7%	-
photon all	**16**	**1.64**	**1.57**	**1.95**	**1.02**	**19%**	**-**
All	22	1.51	1.32	1.95	0.09	41%	-

outliers: 3 of 16 fraction of outliers: 19%





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

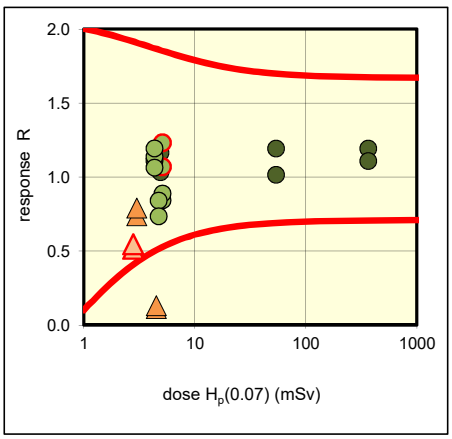
Reporting number 43 : Extremity - photon dosemeter

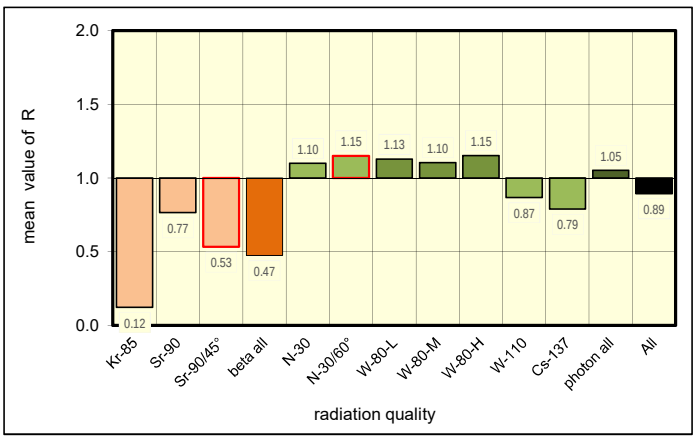
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	11	4.51	0.51	0.11	(outlier)
		17	4.51	0.59	0.13	(outlier)
	Sr-90	20	3.00	2.22	0.74	(OK)
		25	3.00	2.38	0.79	(OK)
	Sr-90/45°	19	2.80	1.45	0.52	(OK)
		27	2.80	1.53	0.55	(OK)
photon	N-30	6	4.90	5.07	**1.03**	OK
		7	4.90	5.71	**1.16**	OK
	N-30/60°	1	5.10	5.46	**1.07**	OK
		4	5.10	6.28	**1.23**	OK
	W-80-L	21	4.30	4.79	**1.11**	OK
		22	4.30	4.89	**1.14**	OK
		23	4.30	4.58	**1.06**	OK
		32	4.30	5.13	**1.19**	OK
	W-80-M	16	54.0	64.39	**1.19**	OK
		18	54.0	54.90	**1.02**	OK
	W-80-H	12	366	436.96	**1.19**	OK
		14	366	405.98	**1.11**	OK
	W-110	30	5.10	4.30	**0.84**	OK
		31	5.10	4.54	**0.89**	OK
	Cs-137	9	4.70	3.95	**0.84**	OK
		10	4.70	3.46	**0.74**	OK
	NIR	2				**Legend for Quality**
	NIR	3				L ..... low dose
	NIR	5				M ..... medium dose
	NIR	8				H ..... high dose
	NIR	13				NIR ..... not irradiated
	NIR	15				WIR .... wrongly irradiated
	NIR	24				
	NIR	26				
	NIR	28				
	NIR	29				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.12	0.12	0.13	0.11	10%	-
Sr-90	2	0.77	0.77	0.79	0.74	5%	Sr-90: 45°/0°
Sr-90/45°	2	0.53	0.53	0.55	0.52	4%	0.69
beta all	6	0.53	0.47	0.79	0.11	62%	-
N-30	2	1.10	1.10	1.16	1.03	8%	**N-30: 60°/0°**
N-30/60°	2	1.15	1.15	1.23	1.07	10%	1.05
W-80-L	4	1.13	1.13	1.19	1.06	5%	**W-80: H/L**
W-80-M	2	1.10	1.10	1.19	1.02	11%	1.02
W-80-H	2	1.15	1.15	1.19	1.11	5%	
W-110	2	0.87	0.87	0.89	0.84	4%	-
Cs-137	2	0.79	0.79	0.84	0.74	9%	-
photon all	**16**	**1.09**	**1.05**	**1.23**	**0.74**	**14%**	**-**
All	22	1.03	0.89	1.23	0.11	36%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

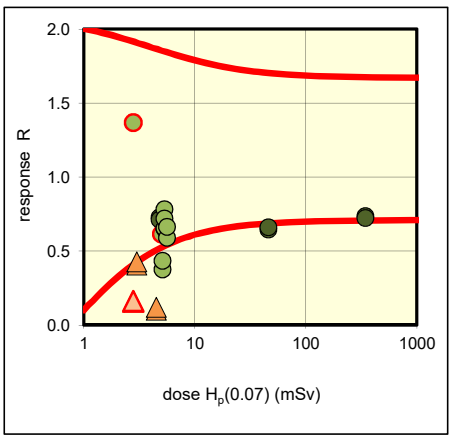
Reporting number 44 : Extremity - photon dosemeter

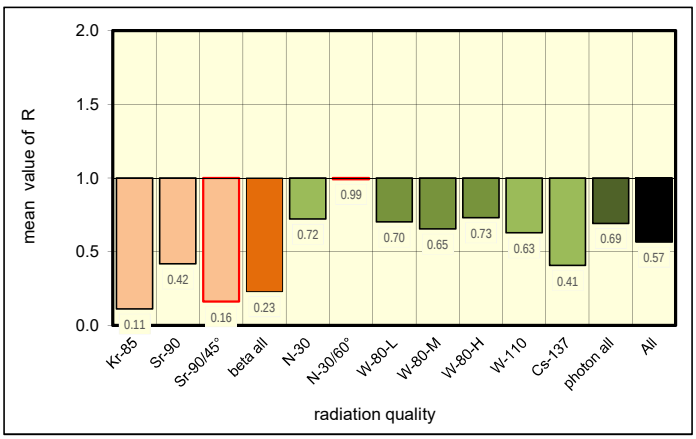
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	7	4.51	0.46	0.10	(outlier)
		19	4.51	0.54	0.12	(outlier)
	Sr-90	3	3.00	1.22	0.41	(outlier)
		18	3.00	1.28	0.43	(OK)
	Sr-90/45°	12	2.80	0.44	0.16	(outlier)
		29	2.80	0.46	0.16	(outlier)
photon	N-30	25	4.80	3.50	**0.73**	OK
		28	4.80	3.42	**0.71**	OK
	N-30/60°	16	5.00	3.08	**0.62**	OK
		17	2.80	3.83	**1.37**	OK
	W-80-L	21	5.30	3.45	**0.65**	OK
		22	5.30	3.47	**0.65**	OK
		30	5.30	4.15	**0.78**	OK
		31	5.30	3.82	**0.72**	OK
	W-80-M	8	46.0	29.73	**0.65**	outlier
		9	46.0	30.46	**0.66**	outlier
	W-80-H	1	345	254.33	**0.74**	OK
		2	345	249.99	**0.72**	OK
	W-110	14	5.60	3.31	**0.59**	OK
		15	5.60	3.72	**0.66**	OK
	Cs-137	26	5.10	1.92	**0.38**	outlier
		27	5.10	2.22	**0.44**	outlier
	NIR	4				**Legend for Quality**
	NIR	5				L ……. low dose
	NIR	6				M …… medium dose
	NIR	10				H ……. high dose
	NIR	11				NIR ….. not irradiated
	NIR	13				WIR …. wrongly irradiated
	NIR	20				
	NIR	23				
	NIR	24				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.11	0.11	0.12	0.10	11%	-
Sr-90	2	0.42	0.42	0.43	0.41	3%	Sr-90: 45°/0°
Sr-90/45°	2	0.16	0.16	0.16	0.16	3%	0.39
beta all	6	0.16	0.23	0.43	0.10	64%	-
N-30	2	0.72	0.72	0.73	0.71	2%	**N-30: 60°/0°**
N-30/60°	2	0.99	0.99	1.37	0.62	54%	1.38
W-80-L	4	0.69	0.70	0.78	0.65	9%	**W-80: H/L**
W-80-M	2	0.65	0.65	0.66	0.65	2%	1.04
W-80-H	2	0.73	0.73	0.74	0.72	1%	
W-110	2	0.63	0.63	0.66	0.59	8%	-
Cs-137	2	0.41	0.41	0.44	0.38	10%	-
photon all	**16**	**0.66**	**0.69**	**1.37**	**0.38**	**30%**	**-**
All	22	0.65	0.57	1.37	0.10	50%	-

outliers: 4 of 16 **fraction of outliers: 25%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

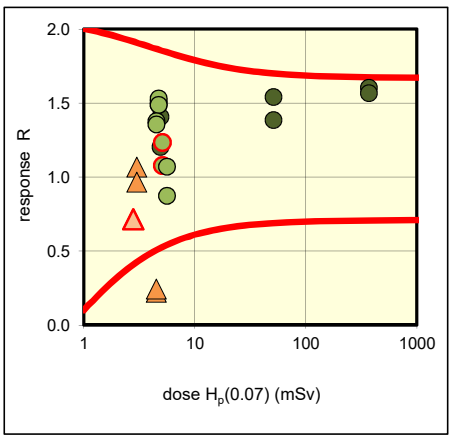
Reporting number 45 : Extremity - photon dosemeter

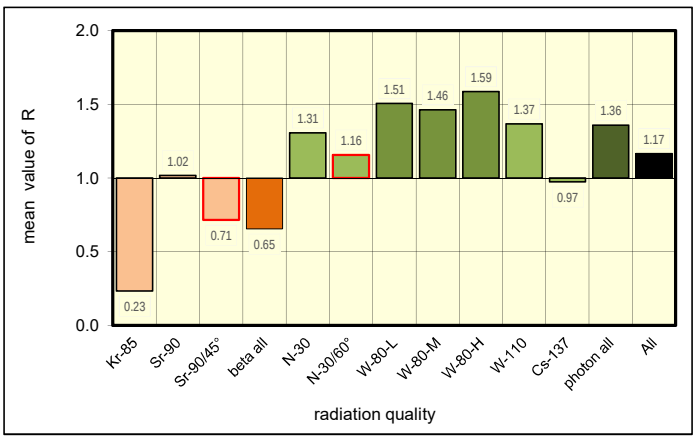
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	13	4.51	1.00	0.22	(outlier)
		14	4.51	1.10	0.24	(outlier)
	Sr-90	20	3.00	3.20	1.07	(OK)
		31	3.00	2.90	0.97	(OK)
	Sr-90/45°	5	2.80	2.00	0.71	(OK)
		9	2.80	2.00	0.71	(OK)
photon	**N-30**	1	4.90	6.90	**1.41**	OK
		16	4.90	5.90	**1.20**	OK
	N-30/60°	21	5.10	5.50	**1.08**	OK
		22	5.10	6.30	**1.24**	OK
	W-80-L	3	4.70	7.10	**1.51**	OK
		8	4.70	7.00	**1.49**	OK
		26	4.70	7.20	**1.53**	OK
		29	4.70	7.00	**1.49**	OK
	W-80-M	15	51.0	70.70	**1.39**	OK
		27	51.0	78.60	**1.54**	OK
	W-80-H	2	369	592.10	**1.60**	OK
		4	369	578.40	**1.57**	OK
	W-110	11	4.50	6.20	**1.38**	OK
		12	4.50	6.10	**1.36**	OK
	Cs-137	24	5.60	6.00	**1.07**	OK
		25	5.60	4.90	**0.88**	OK
	NIR	6				**Legend for Quality**
	NIR	7				L ..... low dose
	NIR	10				M ..... medium dose
	NIR	17				H ..... high dose
	NIR	18				NIR ..... not irradiated
	NIR	19				WIR .... wrongly irradiated
	NIR	23				
	NIR	28				
	NIR	30				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.23	0.23	0.24	0.22	7%	-
Sr-90	2	1.02	1.02	1.07	0.97	7%	Sr-90: 45°/0°
Sr-90/45°	2	0.71	0.71	0.71	0.71	0%	0.70
beta all	6	0.71	0.65	1.07	0.22	54%	-
N-30	2	1.31	1.31	1.41	1.20	11%	**N-30: 60°/0°**
N-30/60°	2	1.16	1.16	1.24	1.08	10%	0.89
W-80-L	4	1.50	1.51	1.53	1.49	1%	**W-80: H/L**
W-80-M	2	1.46	1.46	1.54	1.39	7%	1.05
W-80-H	2	1.59	1.59	1.60	1.57	2%	
W-110	2	1.37	1.37	1.38	1.36	1%	-
Cs-137	2	0.97	0.97	1.07	0.88	14%	-
photon all	**16**	**1.40**	**1.36**	**1.60**	**0.88**	**15%**	**-**
All	22	1.30	1.17	1.60	0.22	35%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

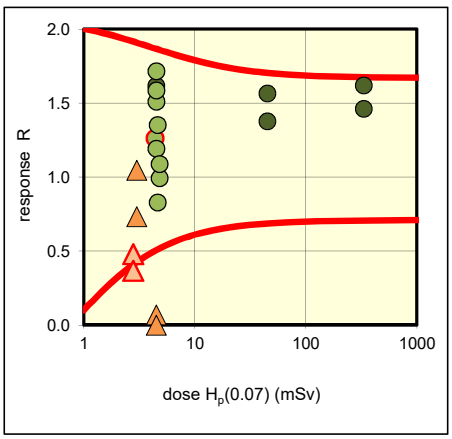
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

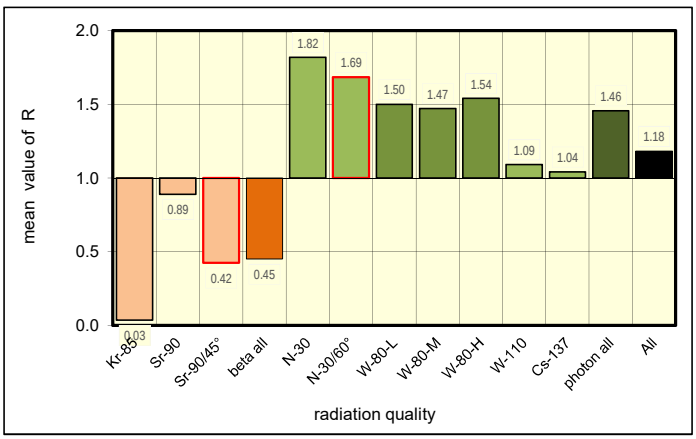
Reporting number 46 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	16	4.51	0.31	**0.07**	outlier
		23	4.51	0.00	**0.00**	outlier
	Sr-90	13	3.00	3.14	**1.05**	OK
		18	3.00	2.20	**0.73**	OK
	Sr-90/45°	10	2.80	1.34	**0.48**	OK
		26	2.80	1.03	**0.37**	outlier
photon	N-30	31	4.50	7.28	**1.62**	OK
		32	4.50	9.09	**2.02**	outlier
	N-30/60°	17	4.40	9.28	**2.11**	outlier
		19	4.40	5.55	**1.26**	OK
	W-80-L	2	4.50	6.79	**1.51**	OK
		5	4.50	5.36	**1.19**	OK
		24	4.50	7.72	**1.72**	OK
		25	4.50	7.14	**1.59**	OK
	W-80-M	6	45.0	70.45	**1.57**	OK
		8	45.0	61.99	**1.38**	OK
	W-80-H	27	333	486.69	**1.46**	OK
		28	333	539.20	**1.62**	OK
	W-110	12	4.60	3.81	**0.83**	OK
		14	4.60	6.22	**1.35**	OK
	Cs-137	21	4.80	4.77	**0.99**	OK
		22	4.80	5.22	**1.09**	OK
	NIR	1				**Legend for Quality**
	NIR	3				L ……. low dose
	NIR	4				M …… medium dose
	NIR	7				H ……. high dose
	NIR	9				NIR ….. not irradiated
	NIR	11				WIR …. wrongly irradiated
	NIR	15				
	NIR	20				
	NIR	29				
	NIR	30				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.03	0.03	0.07	0.00	141%	-
Sr-90	2	0.89	0.89	1.05	0.73	25%	Sr-90: 45°/0°
Sr-90/45°	2	0.42	0.42	0.48	0.37	18%	0.48
beta all	**6**	**0.42**	**0.45**	**1.05**	**0.00**	**89%**	**-**
N-30	2	1.82	1.82	2.02	1.62	16%	N-30: 60°/0°
N-30/60°	2	1.69	1.69	2.11	1.26	36%	0.93
W-80-L	4	1.55	1.50	1.72	1.19	15%	W-80: H/L
W-80-M	2	1.47	1.47	1.57	1.38	9%	1.03
W-80-H	2	1.54	1.54	1.62	1.46	7%	
W-110	2	1.09	1.09	1.35	0.83	34%	-
Cs-137	2	1.04	1.04	1.09	0.99	6%	-
photon all	**16**	**1.49**	**1.46**	**2.11**	**0.83**	**24%**	**-**
All	**22**	**1.31**	**1.18**	**2.11**	**0.00**	**49%**	**-**

outliers: 5 of 22 **fraction of outliers: 23%**





Results: $IC2019_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

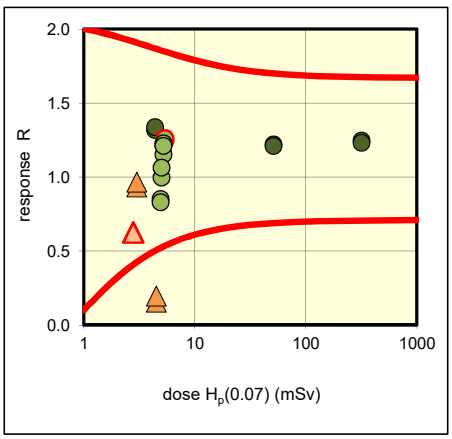
Reporting number 47 : Extremity - photon dosemeter

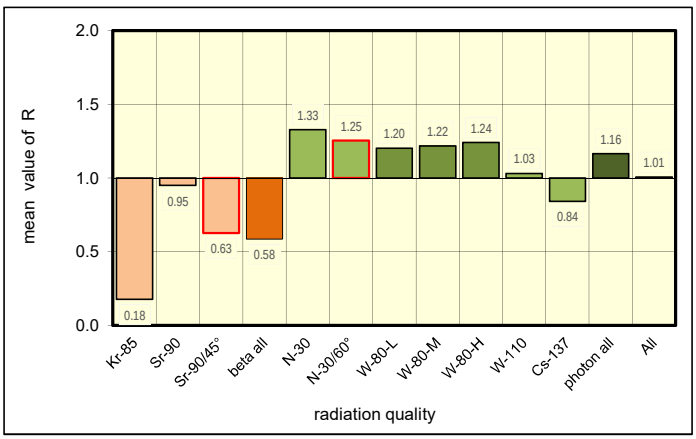
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	3	4.51	0.70	0.16	(outlier)
		30	4.51	0.88	0.20	(outlier)
	Sr-90	8	3.00	2.80	0.93	(OK)
		19	3.00	2.90	0.97	(OK)
	Sr-90/45°	5	2.80	1.76	0.63	(OK)
		12	2.80	1.75	0.63	(OK)
photon	**N-30**	26	4.40	5.80	**1.32**	OK
		28	4.40	5.89	**1.34**	OK
	N-30/60°	15	5.40	6.74	**1.25**	OK
		24	5.40	6.81	**1.26**	OK
	W-80-L	1	5.20	6.32	**1.22**	OK
		4	5.20	6.00	**1.15**	OK
		17	5.20	6.39	**1.23**	OK
		21	5.20	6.30	**1.21**	OK
	W-80-M	6	51.0	62.33	**1.22**	OK
		7	51.0	61.78	**1.21**	OK
	W-80-H	9	317	395.68	**1.25**	OK
		10	317	390.56	**1.23**	OK
	W-110	16	5.00	4.99	**1.00**	OK
		18	5.00	5.32	**1.06**	OK
	Cs-137	11	4.90	4.18	**0.85**	OK
		13	4.90	4.07	**0.83**	OK
	NIR	2				**Legend for Quality**
	NIR	14				L ..... low dose
	NIR	20				M ..... medium dose
	NIR	22				H ..... high dose
	NIR	23				NIR ..... not irradiated
	NIR	25				WIR .... wrongly irradiated
	NIR	27				
	NIR	29				
	NIR	31				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.18	0.18	0.20	0.16	16%	-
Sr-90	2	0.95	0.95	0.97	0.93	2%	Sr-90: 45°/0°
Sr-90/45°	2	0.63	0.63	0.63	0.63	0%	0.66
beta all	6	0.63	0.58	0.97	0.16	60%	-
N-30	2	1.33	1.33	1.34	1.32	1%	**N-30: 60°/0°**
N-30/60°	2	1.25	1.25	1.26	1.25	1%	0.94
W-80-L	4	1.21	1.20	1.23	1.15	3%	**W-80: H/L**
W-80-M	2	1.22	1.22	1.22	1.21	1%	1.03
W-80-H	2	1.24	1.24	1.25	1.23	1%	
W-110	2	1.03	1.03	1.06	1.00	5%	-
Cs-137	2	0.84	0.84	0.85	0.83	2%	-
photon all	**16**	**1.22**	**1.16**	**1.34**	**0.83**	**13%**	**-**
All	22	1.18	1.01	1.34	0.16	34%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

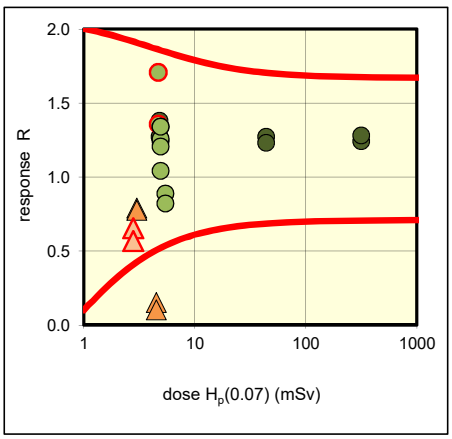
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

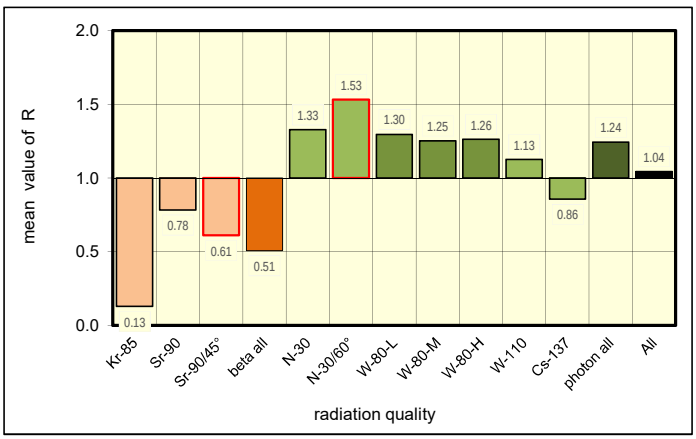
Reporting number 48 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	17	4.51	0.69	**0.15**	outlier
		30	4.51	0.47	**0.10**	outlier
	Sr-90	4	3.00	2.37	**0.79**	OK
		15	3.00	2.33	**0.78**	OK
	Sr-90/45°	6	2.80	1.83	**0.65**	OK
		16	2.80	1.59	**0.57**	OK
photon	N-30	9	4.80	6.11	**1.27**	OK
		10	4.80	6.63	**1.38**	OK
	N-30/60°	19	4.70	6.38	**1.36**	OK
		20	4.70	8.03	**1.71**	OK
	W-80-L	12	4.90	6.10	**1.24**	OK
		18	4.90	6.57	**1.34**	OK
		24	4.90	6.17	**1.26**	OK
		26	4.90	6.57	**1.34**	OK
	W-80-M	13	44.0	56.00	**1.27**	OK
		14	44.0	54.18	**1.23**	OK
	W-80-H	25	315	391.53	**1.24**	OK
		27	315	403.90	**1.28**	OK
	W-110	1	4.90	5.11	**1.04**	OK
		2	4.90	5.92	**1.21**	OK
	Cs-137	21	5.40	4.80	**0.89**	OK
		23	5.40	4.44	**0.82**	OK
	NIR	3				Legend for Quality
	NIR	5				L ..... low dose
	NIR	7				M ..... medium dose
	NIR	8				H ..... high dose
	NIR	11				NIR ..... not irradiated
	NIR	22				WIR .... wrongly irradiated
	NIR	28				
	NIR	29				
	NIR	31				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.13	0.13	0.15	0.10	27%	-
Sr-90	2	0.78	0.78	0.79	0.78	1%	Sr-90: 45°/0°
Sr-90/45°	2	0.61	0.61	0.65	0.57	10%	0.78
beta all	**6**	**0.61**	**0.51**	**0.79**	**0.10**	**60%**	**-**
N-30	2	1.33	1.33	1.38	1.27	6%	N-30: 60°/0°
N-30/60°	2	1.53	1.53	1.71	1.36	16%	1.16
W-80-L	4	1.30	1.30	1.34	1.24	4%	W-80: H/L
W-80-M	2	1.25	1.25	1.27	1.23	2%	0.97
W-80-H	2	1.26	1.26	1.28	1.24	2%	
W-110	2	1.13	1.13	1.21	1.04	10%	-
Cs-137	2	0.86	0.86	0.89	0.82	6%	-
photon all	**16**	**1.27**	**1.24**	**1.71**	**0.82**	**16%**	**-**
All	**22**	**1.24**	**1.04**	**1.71**	**0.10**	**39%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

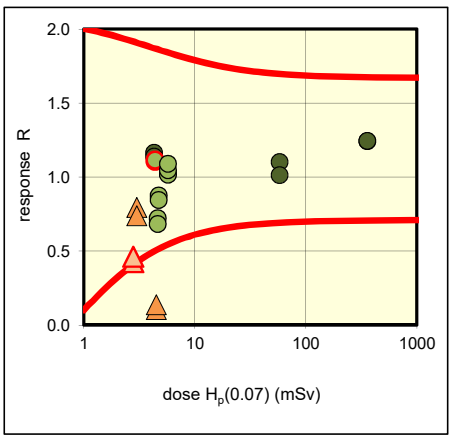
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

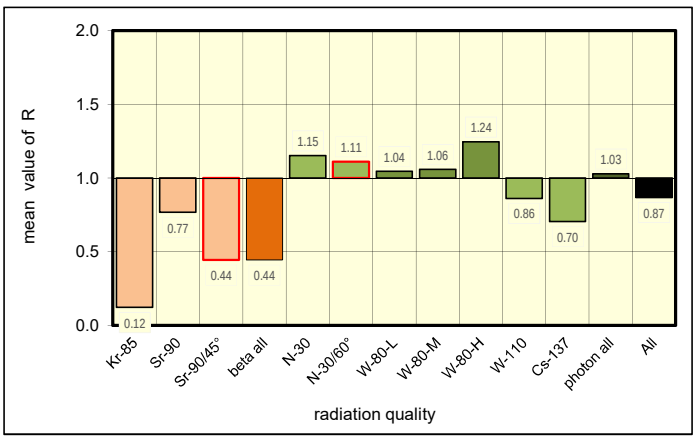
Reporting number 49 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	10	4.51	0.47	**0.10**	outlier
		16	4.51	0.62	**0.14**	outlier
	Sr-90	2	3.00	2.39	**0.80**	OK
		31	3.00	2.22	**0.74**	OK
	Sr-90/45°	14	2.80	1.19	**0.43**	OK
		27	2.80	1.29	**0.46**	OK
photon	N-30	20	4.30	5.01	**1.16**	OK
		25	4.30	4.89	**1.14**	OK
	N-30/60°	23	4.40	4.87	**1.11**	OK
		24	4.40	4.91	**1.11**	OK
	W-80-L	11	5.70	5.85	**1.03**	OK
		12	5.70	5.80	**1.02**	OK
		18	5.70	5.97	**1.05**	OK
		19	5.70	6.21	**1.09**	OK
	W-80-M	21	58.0	63.94	**1.10**	OK
		22	58.0	58.77	**1.01**	OK
	W-80-H	7	358	445.13	**1.24**	OK
		8	358	445.94	**1.25**	OK
	W-110	28	4.70	4.12	**0.88**	OK
		29	4.70	3.98	**0.85**	OK
	Cs-137	9	4.60	3.33	**0.72**	OK
		17	4.60	3.15	**0.68**	OK
	NIR	1				**Legend for Quality**
	NIR	3				L ..... low dose
	NIR	4				M ..... medium dose
	NIR	5				H ..... high dose
	NIR	6				NIR ..... not irradiated
	NIR	13				WIR .... wrongly irradiated
	NIR	15				
	NIR	26				
	NIR	30				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.12	0.12	0.14	0.10	19%	-
Sr-90	2	0.77	0.77	0.80	0.74	5%	Sr-90: 45°/0°
Sr-90/45°	2	0.44	0.44	0.46	0.43	6%	0.58
beta all	**6**	**0.44**	**0.44**	**0.80**	**0.10**	**65%**	**-**
N-30	2	1.15	1.15	1.16	1.14	2%	N-30: 60°/0°
N-30/60°	2	1.11	1.11	1.11	1.11	0%	0.97
W-80-L	4	1.04	1.04	1.09	1.02	3%	W-80: H/L
W-80-M	2	1.06	1.06	1.10	1.01	6%	1.19
W-80-H	2	1.24	1.24	1.25	1.24	0%	
W-110	2	0.86	0.86	0.88	0.85	3%	-
Cs-137	2	0.70	0.70	0.72	0.68	4%	-
photon all	**16**	**1.07**	**1.03**	**1.25**	**0.68**	**16%**	**-**
All	**22**	**1.02**	**0.87**	**1.25**	**0.10**	**38%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

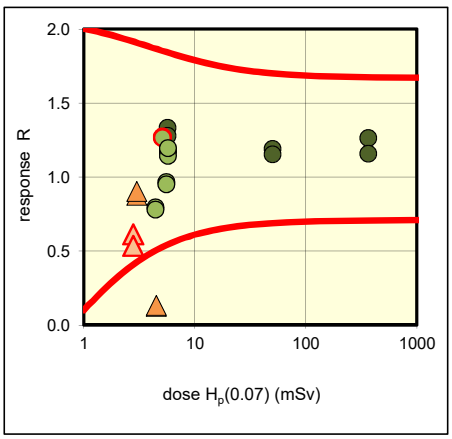
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

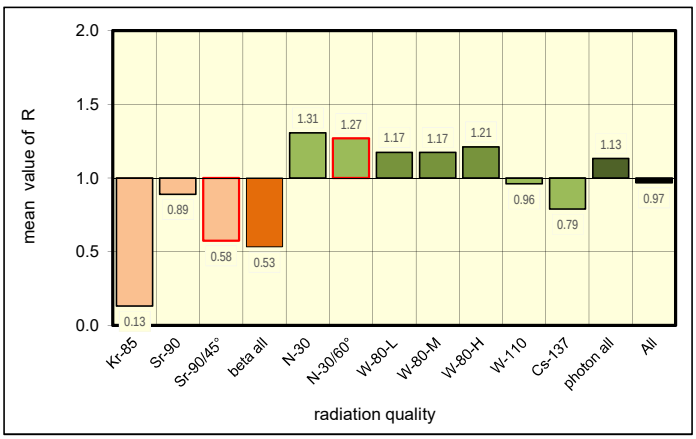
Reporting number 50 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	11	4.51	0.57	**0.13**	outlier
		29	4.51	0.60	**0.13**	outlier
	Sr-90	12	3.00	2.63	**0.88**	OK
		21	3.00	2.71	**0.90**	OK
	Sr-90/45°	6	2.80	1.72	**0.61**	OK
		30	2.80	1.50	**0.54**	OK
photon	N-30	1	5.70	7.60	**1.33**	OK
		2	5.70	7.29	**1.28**	OK
	N-30/60°	8	5.10	6.48	**1.27**	OK
		9	5.10	6.46	**1.27**	OK
	W-80-L	5	5.70	6.67	**1.17**	OK
		10	5.70	6.77	**1.19**	OK
		24	5.70	6.52	**1.14**	OK
		27	5.70	6.82	**1.20**	OK
	W-80-M	31	50.0	59.60	**1.19**	OK
		32	50.0	57.70	**1.15**	OK
	W-80-H	13	366	463.00	**1.27**	OK
		14	366	424.00	**1.16**	OK
	W-110	20	5.50	5.32	**0.97**	OK
		22	5.50	5.24	**0.95**	OK
	Cs-137	25	4.40	3.50	**0.80**	OK
		26	4.40	3.44	**0.78**	OK
	NIR	3				**Legend for Quality**
	NIR	4				L ……. low dose
	NIR	7				M …… medium dose
	NIR	15				H ……. high dose
	NIR	16				NIR ….. not irradiated
	NIR	17				WIR …. wrongly irradiated
	NIR	18				
	NIR	19				
	NIR	23				
	NIR	28				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.13	0.13	0.13	0.13	4%	-
Sr-90	2	0.89	0.89	0.90	0.88	2%	Sr-90: 45°/0°
Sr-90/45°	2	0.58	0.58	0.61	0.54	10%	0.65
beta all	**6**	**0.58**	**0.53**	**0.90**	**0.13**	**64%**	**-**
N-30	2	1.31	1.31	1.33	1.28	3%	N-30: 60°/0°
N-30/60°	2	1.27	1.27	1.27	1.27	0%	0.97
W-80-L	4	1.18	1.17	1.20	1.14	2%	W-80: H/L
W-80-M	2	1.17	1.17	1.19	1.15	2%	1.03
W-80-H	2	1.21	1.21	1.27	1.16	6%	
W-110	2	0.96	0.96	0.97	0.95	1%	-
Cs-137	2	0.79	0.79	0.80	0.78	1%	-
photon all	**16**	**1.18**	**1.13**	**1.33**	**0.78**	**15%**	**-**
All	**22**	**1.15**	**0.97**	**1.33**	**0.13**	**36%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

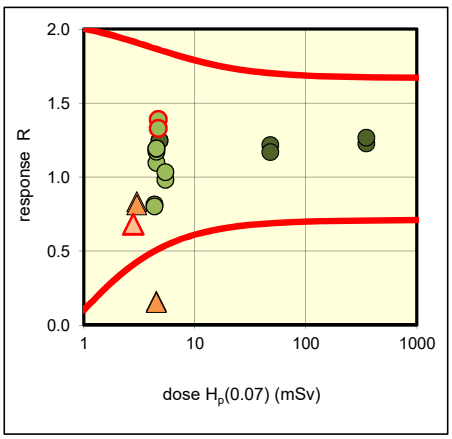
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

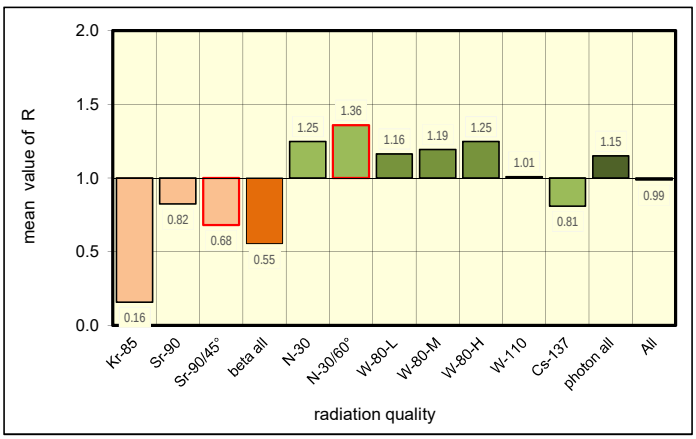
Reporting number 51 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	22	4.51	0.73	**0.16**	outlier
		26	4.51	0.69	**0.15**	outlier
	Sr-90	4	3.00	2.50	**0.83**	OK
		13	3.00	2.44	**0.81**	OK
	Sr-90/45°	1	2.80	1.90	**0.68**	OK
		17	2.80	1.91	**0.68**	OK
photon	N-30	30	4.80	5.99	**1.25**	OK
		31	4.80	5.99	**1.25**	OK
	N-30/60°	24	4.70	6.53	**1.39**	OK
		25	4.70	6.25	**1.33**	OK
	W-80-L	18	4.50	4.94	**1.10**	OK
		23	4.50	5.28	**1.17**	OK
		27	4.50	5.36	**1.19**	OK
		29	4.50	5.37	**1.19**	OK
	W-80-M	8	48.0	58.39	**1.22**	OK
		10	48.0	56.11	**1.17**	OK
	W-80-H	9	350	429.40	**1.23**	OK
		11	350	443.27	**1.27**	OK
	W-110	20	5.40	5.31	**0.98**	OK
		28	5.40	5.58	**1.03**	OK
	Cs-137	5	4.30	3.51	**0.82**	OK
		6	4.30	3.45	**0.80**	OK
	NIR	2				**Legend for Quality**
	NIR	3				L ……. low dose
	NIR	7				M …… medium dose
	NIR	12				H ……. high dose
	NIR	14				NIR ….. not irradiated
	NIR	15				WIR …. wrongly irradiated
	NIR	16				
	NIR	19				
	NIR	21				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.16	0.16	0.16	0.15	4%	-
Sr-90	2	0.82	0.82	0.83	0.81	2%	Sr-90: 45°/0°
Sr-90/45°	2	0.68	0.68	0.68	0.68	0%	0.83
beta all	**6**	**0.68**	**0.55**	**0.83**	**0.15**	**57%**	**-**
N-30	2	1.25	1.25	1.25	1.25	0%	N-30: 60°/0°
N-30/60°	2	1.36	1.36	1.39	1.33	3%	1.09
W-80-L	4	1.18	1.16	1.19	1.10	4%	W-80: H/L
W-80-M	2	1.19	1.19	1.22	1.17	3%	1.07
W-80-H	2	1.25	1.25	1.27	1.23	2%	
W-110	2	1.01	1.01	1.03	0.98	4%	-
Cs-137	2	0.81	0.81	0.82	0.80	1%	-
photon all	**16**	**1.19**	**1.15**	**1.39**	**0.80**	**14%**	**-**
All	**22**	**1.13**	**0.99**	**1.39**	**0.15**	**35%**	**-**

outliers: 2 of 22 fraction of outliers: 9%





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

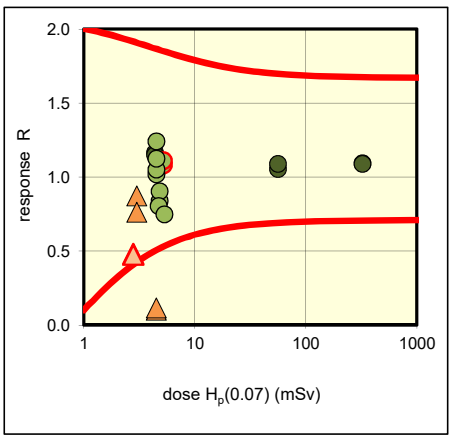
Reporting number 52 : Extremity - photon dosemeter

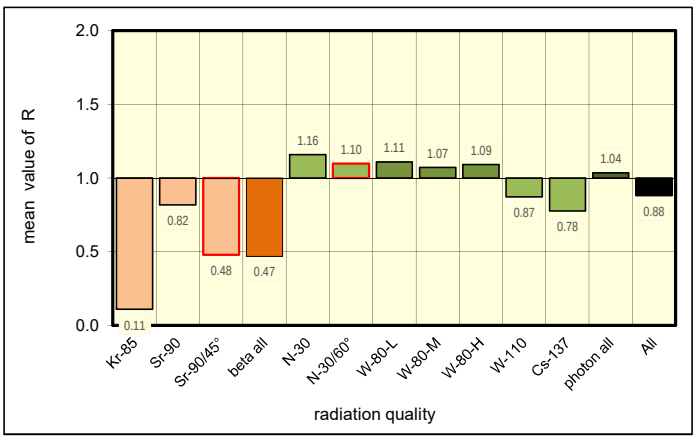
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	5	4.51	0.46	0.10	(outlier)
		7	4.51	0.52	0.12	(outlier)
	Sr-90	6	3.00	2.62	0.87	(OK)
		25	3.00	2.29	0.76	(OK)
	Sr-90/45°	13	2.80	1.35	0.48	(OK)
		15	2.80	1.33	0.48	(OK)
photon	N-30	17	4.40	5.13	**1.17**	OK
		22	4.40	5.06	**1.15**	OK
	N-30/60°	9	5.20	5.63	**1.08**	OK
		10	5.20	5.78	**1.11**	OK
	W-80-L	12	4.50	4.59	**1.02**	OK
		14	4.50	5.59	**1.24**	OK
		23	4.50	4.73	**1.05**	OK
		24	4.50	5.06	**1.12**	OK
	W-80-M	26	56.0	59.01	**1.05**	OK
		27	56.0	61.06	**1.09**	OK
	W-80-H	30	324	354.57	**1.09**	OK
		31	324	352.60	**1.09**	OK
	W-110	19	4.80	4.03	**0.84**	OK
		20	4.80	4.34	**0.90**	OK
	Cs-137	4	4.70	3.78	**0.80**	OK
		8	5.30	3.97	**0.75**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	3				M …… medium dose
	NIR	11				H ……. high dose
	NIR	16				NIR ….. not irradiated
	NIR	18				WIR …. wrongly irradiated
	NIR	21				
	NIR	28				
	NIR	29				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.11	0.11	0.12	0.10	9%	-
Sr-90	2	0.82	0.82	0.87	0.76	10%	Sr-90: 45°/0°
Sr-90/45°	2	0.48	0.48	0.48	0.48	1%	0.58
beta all	6	0.48	0.47	0.87	0.10	68%	-
N-30	2	1.16	1.16	1.17	1.15	1%	**N-30: 60°/0°**
N-30/60°	2	1.10	1.10	1.11	1.08	2%	0.95
W-80-L	4	1.09	1.11	1.24	1.02	9%	**W-80: H/L**
W-80-M	2	1.07	1.07	1.09	1.05	2%	0.98
W-80-H	2	1.09	1.09	1.09	1.09	0%	
W-110	2	0.87	0.87	0.90	0.84	5%	-
Cs-137	2	0.78	0.78	0.80	0.75	5%	-
photon all	**16**	**1.09**	**1.04**	**1.24**	**0.75**	**13%**	**-**
All	22	1.04	0.88	1.24	0.10	37%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

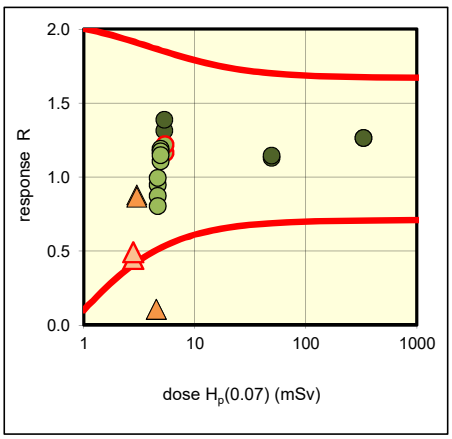
Reporting number 53 : Extremity - photon dosemeter

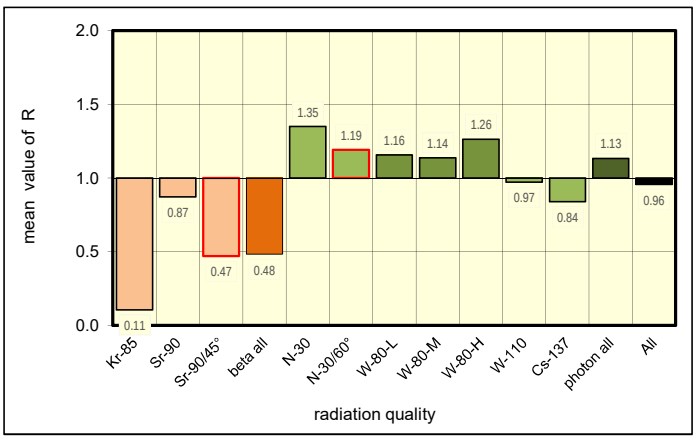
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	15	4.51	0.47	0.10	(outlier)
		24	4.51	0.48	0.11	(outlier)
	Sr-90	6	3.00	2.64	0.88	(OK)
		18	3.00	2.59	0.86	(OK)
	Sr-90/45°	19	2.80	1.25	0.45	(OK)
		27	2.80	1.38	0.49	(OK)
photon	**N-30**	21	5.30	6.96	**1.31**	OK
		22	5.30	7.35	**1.39**	OK
	N-30/60°	13	5.40	6.29	**1.16**	OK
		14	5.40	6.58	**1.22**	OK
	W-80-L	2	4.90	5.84	**1.19**	OK
		4	4.90	5.76	**1.18**	OK
		29	4.90	5.43	**1.11**	OK
		30	4.90	5.63	**1.15**	OK
	W-80-M	28	49.0	55.40	**1.13**	OK
		31	49.0	56.10	**1.14**	OK
	W-80-H	3	330	417.00	**1.26**	OK
		7	330	417.00	**1.26**	OK
	W-110	1	4.60	4.36	**0.95**	OK
		5	4.60	4.58	**1.00**	OK
	Cs-137	16	4.60	4.02	**0.87**	OK
		20	4.60	3.70	**0.80**	OK
	NIR	8				**Legend for Quality**
	NIR	9				L ……. low dose
	NIR	10				M …… medium dose
	NIR	11				H ……. high dose
	NIR	12				NIR ….. not irradiated
	NIR	17				WIR …. wrongly irradiated
	NIR	23				
	NIR	25				
	NIR	26				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.11	0.11	0.11	0.10	1%	-
Sr-90	2	0.87	0.87	0.88	0.86	1%	Sr-90: 45°/0°
Sr-90/45°	2	0.47	0.47	0.49	0.45	7%	0.54
beta all	6	0.47	0.48	0.88	0.10	71%	-
N-30	2	1.35	1.35	1.39	1.31	4%	**N-30: 60°/0°**
N-30/60°	2	1.19	1.19	1.22	1.16	3%	0.88
W-80-L	4	1.16	1.16	1.19	1.11	3%	**W-80: H/L**
W-80-M	2	1.14	1.14	1.14	1.13	1%	1.09
W-80-H	2	1.26	1.26	1.26	1.26	0%	
W-110	2	0.97	0.97	1.00	0.95	3%	-
Cs-137	2	0.84	0.84	0.87	0.80	6%	-
photon all	**16**	**1.16**	**1.13**	**1.39**	**0.80**	**14%**	**-**
All	22	1.12	0.96	1.39	0.10	38%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

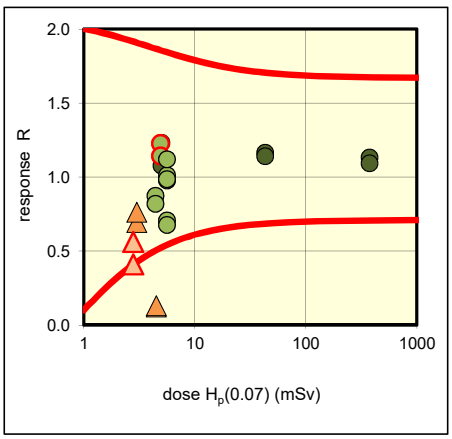
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

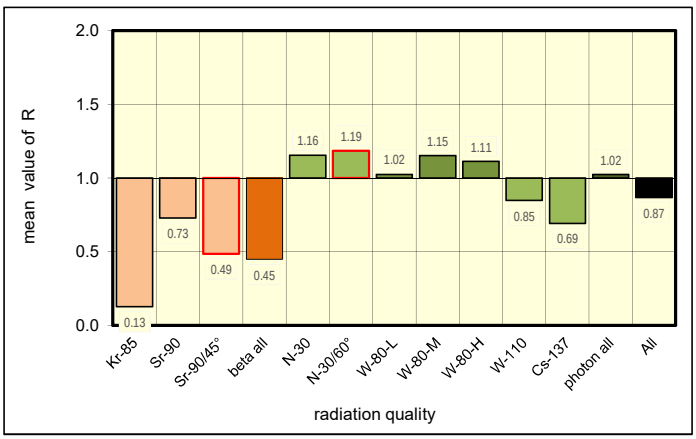
Reporting number 54 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	20	4.51	0.55	**0.12**	outlier
		24	4.51	0.59	**0.13**	outlier
	Sr-90	6	3.00	2.08	**0.69**	OK
		17	3.00	2.29	**0.76**	OK
	Sr-90/45°	3	2.80	1.15	**0.41**	OK
		7	2.80	1.57	**0.56**	OK
photon	N-30	21	5.00	5.39	**1.08**	OK
		23	5.00	6.16	**1.23**	OK
	N-30/60°	31	4.90	6.02	**1.23**	OK
		32	4.90	5.60	**1.14**	OK
	W-80-L	2	5.60	5.48	**0.98**	OK
		5	5.60	5.67	**1.01**	OK
		11	5.60	6.28	**1.12**	OK
		18	5.60	5.52	**0.99**	OK
	W-80-M	16	43.0	50.05	**1.16**	OK
		19	43.0	49.08	**1.14**	OK
	W-80-H	8	375	424.32	**1.13**	OK
		9	375	409.82	**1.09**	OK
	W-110	29	4.40	3.85	**0.88**	OK
		30	4.40	3.61	**0.82**	OK
	Cs-137	13	5.60	3.96	**0.71**	OK
		14	5.60	3.79	**0.68**	OK
	NIR	1				**Legend for Quality**
	NIR	4				L ..... low dose
	NIR	10				M ..... medium dose
	NIR	12				H ..... high dose
	NIR	15				NIR ..... not irradiated
	NIR	22				WIR .... wrongly irradiated
	NIR	25				
	NIR	26				
	NIR	27				
	NIR	28				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.13	0.13	0.13	0.12	5%	-
Sr-90	2	0.73	0.73	0.76	0.69	7%	Sr-90: 45°/0°
Sr-90/45°	2	0.49	0.49	0.56	0.41	22%	0.67
beta all	**6**	**0.49**	**0.45**	**0.76**	**0.12**	**62%**	**-**
N-30	2	1.16	1.16	1.23	1.08	9%	N-30: 60°/0°
N-30/60°	2	1.19	1.19	1.23	1.14	5%	1.03
W-80-L	4	1.00	1.02	1.12	0.98	6%	W-80: H/L
W-80-M	2	1.15	1.15	1.16	1.14	1%	1.09
W-80-H	2	1.11	1.11	1.13	1.09	2%	
W-110	2	0.85	0.85	0.88	0.82	5%	-
Cs-137	2	0.69	0.69	0.71	0.68	3%	-
photon all	**16**	**1.09**	**1.02**	**1.23**	**0.68**	**17%**	**-**
All	**22**	**0.98**	**0.87**	**1.23**	**0.12**	**38%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

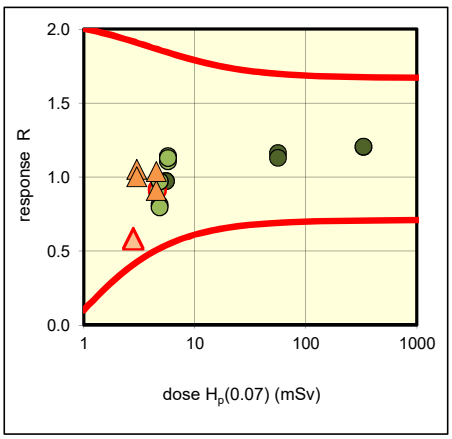
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

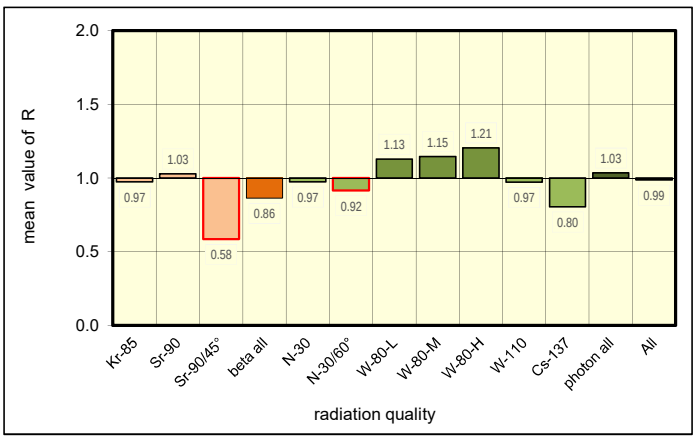
Reporting number 55 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	23	4.51	4.10	**0.91**	OK
		25	4.51	4.68	**1.04**	OK
	Sr-90	7	3.00	3.16	**1.05**	OK
		16	3.00	3.01	**1.00**	OK
	Sr-90/45°	8	2.80	1.65	**0.59**	OK
		18	2.80	1.62	**0.58**	OK
photon	N-30	1	5.50	5.36	**0.97**	OK
		2	5.50	5.35	**0.97**	OK
	N-30/60°	28	4.60	4.24	**0.92**	OK
		29	4.60	4.18	**0.91**	OK
	W-80-L	17	5.70	6.46	**1.13**	OK
		20	5.70	6.31	**1.11**	OK
		30	5.70	6.51	**1.14**	OK
		31	5.70	6.44	**1.13**	OK
	W-80-M	9	56.0	65.06	**1.16**	OK
		10	56.0	63.29	**1.13**	OK
	W-80-H	12	330	397.19	**1.20**	OK
		13	330	398.20	**1.21**	OK
	W-110	6	4.80	4.66	**0.97**	OK
		11	4.80	4.66	**0.97**	OK
	Cs-137	4	4.80	3.90	**0.81**	OK
		5	4.80	3.82	**0.80**	OK
	NIR	3				**Legend for Quality**
	NIR	14				L ……. low dose
	NIR	15				M …… medium dose
	NIR	19				H ……. high dose
	NIR	21				NIR ….. not irradiated
	NIR	22				WIR …. wrongly irradiated
	NIR	24				
	NIR	26				
	NIR	27				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.97	0.97	1.04	0.91	9%	-
Sr-90	2	1.03	1.03	1.05	1.00	3%	Sr-90: 45°/0°
Sr-90/45°	2	0.58	0.58	0.59	0.58	1%	0.57
beta all	**6**	**0.96**	**0.86**	**1.05**	**0.58**	**26%**	**-**
N-30	2	0.97	0.97	0.97	0.97	0%	N-30: 60°/0°
N-30/60°	2	0.92	0.92	0.92	0.91	1%	0.94
W-80-L	4	1.13	1.13	1.14	1.11	1%	W-80: H/L
W-80-M	2	1.15	1.15	1.16	1.13	2%	1.07
W-80-H	2	1.21	1.21	1.21	1.20	0%	
W-110	2	0.97	0.97	0.97	0.97	0%	-
Cs-137	2	0.80	0.80	0.81	0.80	1%	-
photon all	**16**	**1.04**	**1.03**	**1.21**	**0.80**	**13%**	**-**
All	**22**	**0.99**	**0.99**	**1.21**	**0.58**	**18%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

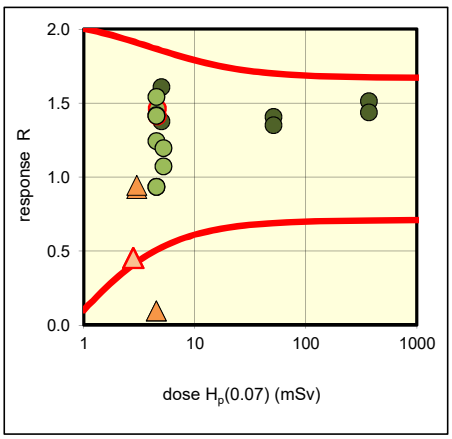
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

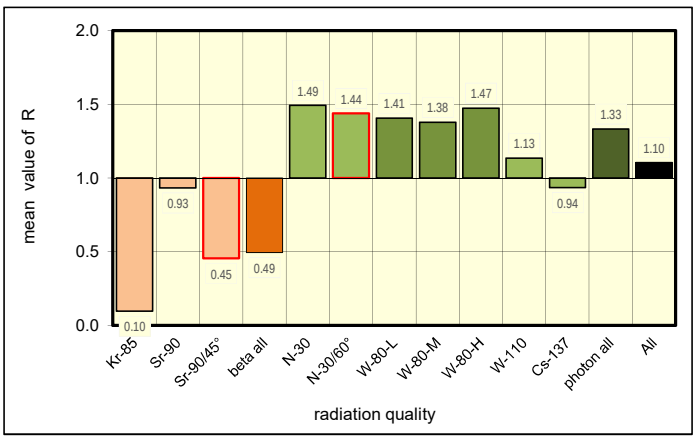
Reporting number 56 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	30	4.51	0.43	**0.10**	outlier
		31	4.51	0.44	**0.10**	outlier
	Sr-90	13	3.00	2.77	**0.92**	OK
		29	3.00	2.83	**0.94**	OK
	Sr-90/45°	18	2.80	1.27	**0.45**	OK
		22	2.80	1.27	**0.45**	OK
photon	N-30	14	5.00	8.04	**1.61**	OK
		16	5.00	6.89	**1.38**	OK
	N-30/60°	7	4.60	6.50	**1.41**	OK
		8	4.60	6.73	**1.46**	OK
	W-80-L	11	4.50	6.94	**1.54**	OK
		12	4.50	5.60	**1.24**	OK
		26	4.50	6.39	**1.42**	OK
		32	4.50	6.37	**1.42**	OK
	W-80-M	1	51.0	71.74	**1.41**	OK
		2	51.0	68.91	**1.35**	OK
	W-80-H	23	371	561.27	**1.51**	OK
		25	371	533.07	**1.44**	OK
	W-110	24	5.20	5.58	**1.07**	OK
		27	5.20	6.22	**1.20**	OK
	Cs-137	5	4.50	4.21	**0.94**	OK
		6	4.50	4.21	**0.94**	OK
	NIR	3				**Legend for Quality**
	NIR	4				L ..... low dose
	NIR	9				M ..... medium dose
	NIR	10				H ..... high dose
	NIR	15				NIR ..... not irradiated
	NIR	17				WIR .... wrongly irradiated
	NIR	19				
	NIR	20				
	NIR	21				
	NIR	28				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.10	0.10	0.10	0.10	2%	-
Sr-90	2	0.93	0.93	0.94	0.92	2%	Sr-90: 45°/0°
Sr-90/45°	2	0.45	0.45	0.45	0.45	0%	0.49
beta all	**6**	**0.45**	**0.49**	**0.94**	**0.10**	**76%**	**-**
N-30	2	1.49	1.49	1.61	1.38	11%	N-30: 60°/0°
N-30/60°	2	1.44	1.44	1.46	1.41	2%	0.96
W-80-L	4	1.42	1.41	1.54	1.24	9%	W-80: H/L
W-80-M	2	1.38	1.38	1.41	1.35	3%	1.05
W-80-H	2	1.47	1.47	1.51	1.44	4%	
W-110	2	1.13	1.13	1.20	1.07	8%	-
Cs-137	2	0.94	0.94	0.94	0.94	0%	-
photon all	**16**	**1.41**	**1.33**	**1.61**	**0.94**	**15%**	**-**
All	**22**	**1.30**	**1.10**	**1.61**	**0.10**	**41%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

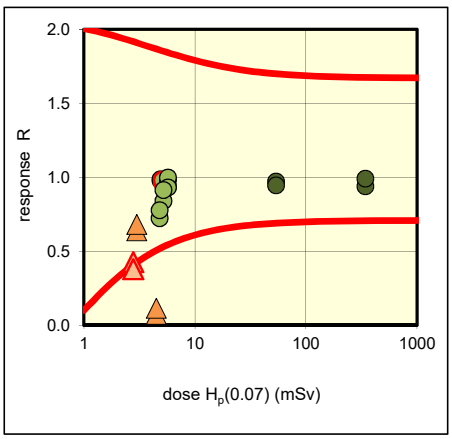
Reporting number 57 : Extremity - photon dosemeter

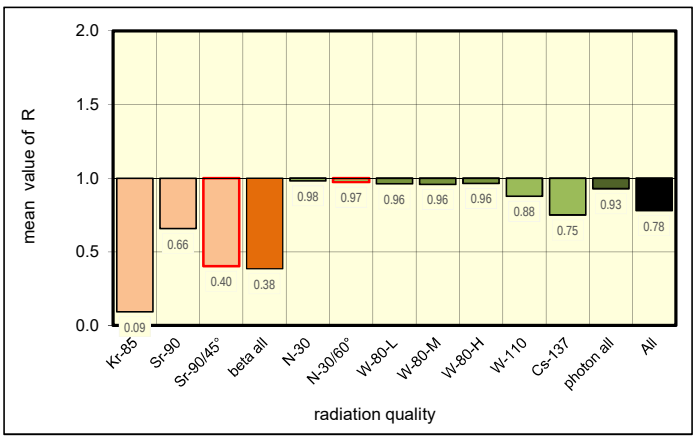
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	4	4.51	0.33	0.07	(outlier)
		30	4.51	0.51	0.11	(outlier)
	Sr-90	8	3.00	1.91	0.64	(OK)
		23	3.00	2.04	0.68	(OK)
	Sr-90/45°	21	2.80	1.19	0.43	(OK)
		22	2.80	1.06	0.38	(outlier)
photon	N-30	15	4.90	4.79	**0.98**	OK
		16	4.90	4.83	**0.99**	OK
	N-30/60°	5	5.10	4.93	**0.97**	OK
		7	5.10	4.99	**0.98**	OK
	W-80-L	10	5.70	5.59	**0.98**	OK
		11	5.70	5.34	**0.94**	OK
		26	5.70	5.68	**1.00**	OK
		27	5.70	5.30	**0.93**	OK
	W-80-M	17	54.0	52.38	**0.97**	OK
		31	54.0	51.01	**0.94**	OK
	W-80-H	1	344	322.94	**0.94**	OK
		24	344	340.14	**0.99**	OK
	W-110	28	5.20	4.37	**0.84**	OK
		29	5.20	4.75	**0.91**	OK
	Cs-137	2	4.80	3.47	**0.72**	OK
		3	4.80	3.73	**0.78**	OK
	NIR	6				**Legend for Quality**
	NIR	9				L ..... low dose
	NIR	12				M ..... medium dose
	NIR	13				H ..... high dose
	NIR	14				NIR ..... not irradiated
	NIR	18				WIR .... wrongly irradiated
	NIR	19				
	NIR	20				
	NIR	25				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.09	0.09	0.11	0.07	30%	-
Sr-90	2	0.66	0.66	0.68	0.64	5%	Sr-90: 45°/0°
Sr-90/45°	2	0.40	0.40	0.43	0.38	8%	0.61
beta all	6	0.40	0.38	0.68	0.07	66%	-
N-30	2	0.98	0.98	0.99	0.98	1%	**N-30: 60°/0°**
N-30/60°	2	0.97	0.97	0.98	0.97	1%	0.99
W-80-L	4	0.96	0.96	1.00	0.93	3%	**W-80: H/L**
W-80-M	2	0.96	0.96	0.97	0.94	2%	1.00
W-80-H	2	0.96	0.96	0.99	0.94	4%	
W-110	2	0.88	0.88	0.91	0.84	6%	-
Cs-137	2	0.75	0.75	0.78	0.72	5%	-
photon all	**16**	**0.96**	**0.93**	**1.00**	**0.72**	**9%**	**-**
All	22	0.93	0.78	1.00	0.07	37%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

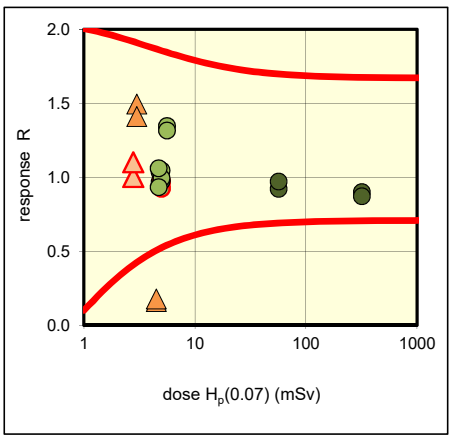
Reporting number 58 : Extremity - photon dosemeter

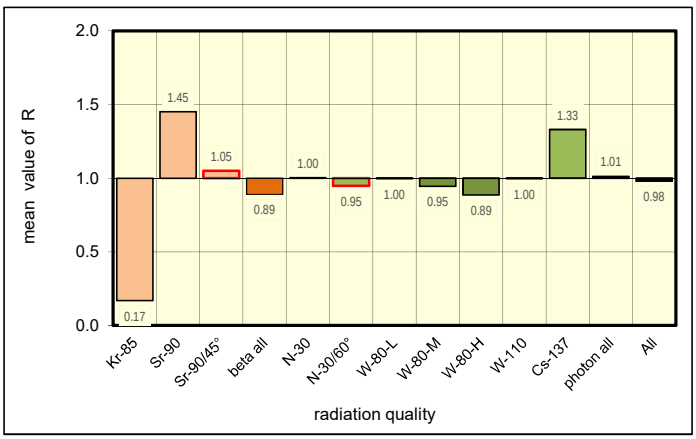
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	4	4.51	0.72	0.16	(outlier)
		24	4.51	0.80	0.18	(outlier)
	Sr-90	19	3.00	4.48	1.49	(OK)
		31	3.00	4.23	1.41	(OK)
	Sr-90/45°	26	2.80	2.80	1.00	(OK)
		32	2.80	3.08	1.10	(OK)
photon	N-30	8	4.80	4.64	**0.97**	OK
		9	4.80	4.97	**1.04**	OK
	N-30/60°	11	5.00	4.63	**0.93**	OK
		14	5.00	4.84	**0.97**	OK
	W-80-L	20	5.00	4.87	**0.97**	OK
		22	5.00	5.23	**1.05**	OK
		29	5.00	4.88	**0.98**	OK
		30	5.00	4.96	**0.99**	OK
	W-80-M	16	57.0	52.46	**0.92**	OK
		17	57.0	55.30	**0.97**	OK
	W-80-H	21	320	287.94	**0.90**	OK
		23	320	278.62	**0.87**	OK
	W-110	27	4.70	4.38	**0.93**	OK
		28	4.70	4.98	**1.06**	OK
	Cs-137	3	5.60	7.53	**1.34**	OK
		5	5.60	7.37	**1.32**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	6				M …… medium dose
	NIR	7				H ……. high dose
	NIR	10				NIR ….. not irradiated
	NIR	12				WIR …. wrongly irradiated
	NIR	13				
	NIR	15				
	NIR	18				
	NIR	25				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.17	0.17	0.18	0.16	7%	-
Sr-90	2	1.45	1.45	1.49	1.41	4%	Sr-90: 45°/0°
Sr-90/45°	2	1.05	1.05	1.10	1.00	7%	0.72
beta all	6	1.05	0.89	1.49	0.16	66%	-
N-30	2	1.00	1.00	1.04	0.97	5%	**N-30: 60°/0°**
N-30/60°	2	0.95	0.95	0.97	0.93	3%	0.95
W-80-L	4	0.98	1.00	1.05	0.97	3%	**W-80: H/L**
W-80-M	2	0.95	0.95	0.97	0.92	4%	0.89
W-80-H	2	0.89	0.89	0.90	0.87	2%	
W-110	2	1.00	1.00	1.06	0.93	9%	-
Cs-137	2	1.33	1.33	1.34	1.32	2%	-
photon all	**16**	**0.97**	**1.01**	**1.34**	**0.87**	**13%**	**-**
All	22	0.98	0.98	1.49	0.16	32%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

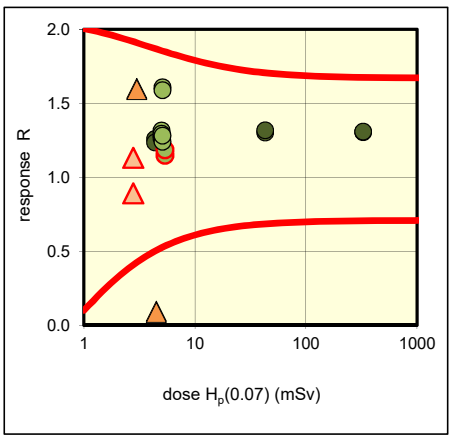
Reporting number 59 : Extremity - photon dosemeter

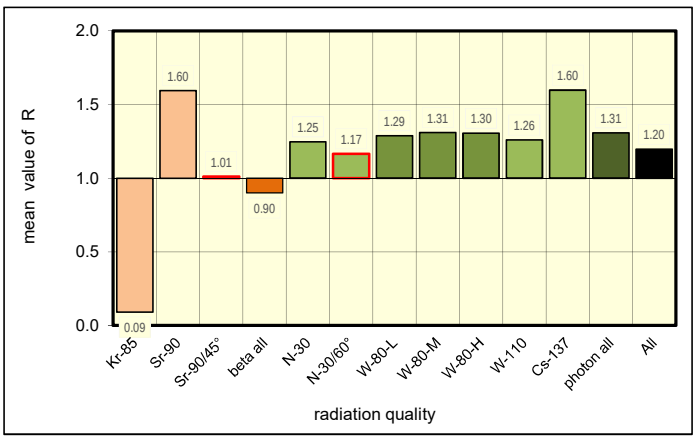
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	8	4.51	0.43	0.10	(outlier)
		10	4.51	0.39	0.09	(outlier)
	Sr-90	20	3.00	4.80	1.60	(OK)
		27	3.00	4.77	1.59	(OK)
	Sr-90/45°	15	2.80	2.49	0.89	(OK)
		19	2.80	3.17	1.13	(OK)
photon	**N-30**	21	4.40	5.54	**1.26**	OK
		22	4.40	5.43	**1.23**	OK
	N-30/60°	16	5.40	6.20	**1.15**	OK
		17	5.40	6.39	**1.18**	OK
	W-80-L	24	5.00	6.57	**1.31**	OK
		25	5.00	6.41	**1.28**	OK
		30	5.00	6.32	**1.26**	OK
		31	5.00	6.47	**1.29**	OK
	W-80-M	12	43.0	55.98	**1.30**	OK
		23	43.0	56.58	**1.32**	OK
	W-80-H	26	329	428.58	**1.30**	OK
		28	329	430.08	**1.31**	OK
	W-110	11	5.10	6.32	**1.24**	OK
		13	5.10	6.53	**1.28**	OK
	Cs-137	2	5.10	8.19	**1.61**	OK
		4	5.10	8.10	**1.59**	OK
	NIR	1				**Legend for Quality**
	NIR	3				L ……. low dose
	NIR	5				M …… medium dose
	NIR	6				H ……. high dose
	NIR	7				NIR ….. not irradiated
	NIR	9				WIR …. wrongly irradiated
	NIR	14				
	NIR	18				
	NIR	29				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.09	0.09	0.10	0.09	7%	-
Sr-90	2	1.60	1.60	1.60	1.59	0%	Sr-90: 45°/0°
Sr-90/45°	2	1.01	1.01	1.13	0.89	17%	0.63
beta all	6	1.01	0.90	1.60	0.09	76%	-
N-30	2	1.25	1.25	1.26	1.23	1%	**N-30: 60°/0°**
N-30/60°	2	1.17	1.17	1.18	1.15	2%	0.94
W-80-L	4	1.29	1.29	1.31	1.26	2%	**W-80: H/L**
W-80-M	2	1.31	1.31	1.32	1.30	1%	1.01
W-80-H	2	1.30	1.30	1.31	1.30	0%	
W-110	2	1.26	1.26	1.28	1.24	2%	-
Cs-137	2	1.60	1.60	1.61	1.59	1%	-
photon all	**16**	**1.29**	**1.31**	**1.61**	**1.15**	**9%**	**-**
All	22	1.28	1.20	1.61	0.09	33%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

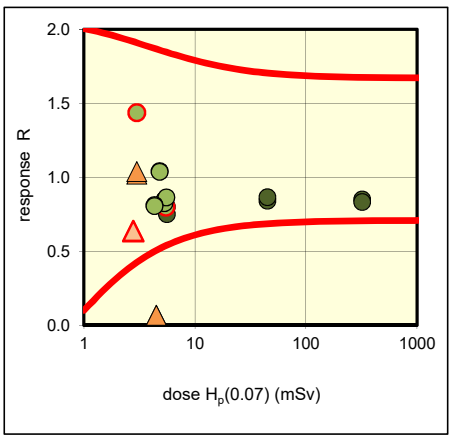
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

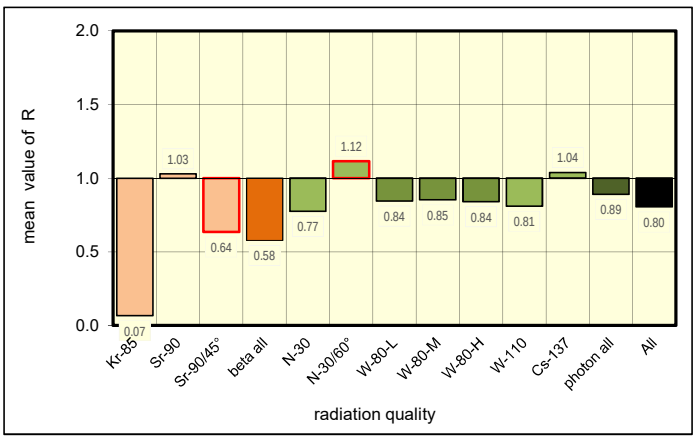
Reporting number 60 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	5	4.51	0.30	**0.07**	outlier
		6	4.51	0.30	**0.07**	outlier
	Sr-90	2	3.00	3.06	**1.02**	OK
		3	3.00	3.11	**1.04**	OK
	Sr-90/45°	4	2.80	1.77	**0.63**	OK
		12	2.80	1.78	**0.64**	OK
photon	N-30	20	5.60	4.47	**0.80**	OK
		22	5.60	4.20	**0.75**	OK
	N-30/60°	24	3.00	4.30	**1.43**	OK
		27	5.50	4.38	**0.80**	OK
	W-80-L	13	5.30	4.48	**0.85**	OK
		14	5.30	4.47	**0.84**	OK
		21	5.30	4.37	**0.83**	OK
		23	5.50	4.75	**0.86**	OK
	W-80-M	1	45.0	37.81	**0.84**	OK
		7	45.0	38.91	**0.86**	OK
	W-80-H	15	321	272.71	**0.85**	OK
		16	321	266.71	**0.83**	OK
	W-110	30	4.30	3.49	**0.81**	OK
		32	4.30	3.46	**0.81**	OK
	Cs-137	10	4.80	4.99	**1.04**	OK
		11	4.80	4.97	**1.04**	OK
	NIR	8				**Legend for Quality**
	NIR	9				L ..... low dose
	NIR	17				M ..... medium dose
	NIR	18				H ..... high dose
	NIR	19				NIR ..... not irradiated
	NIR	25				WIR .... wrongly irradiated
	NIR	26				
	NIR	28				
	NIR	29				
	NIR	31				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.07	0.07	0.07	0.07	0%	-
Sr-90	2	1.03	1.03	1.04	1.02	1%	Sr-90: 45°/0°
Sr-90/45°	2	0.64	0.64	0.64	0.63	0%	0.62
beta all	**6**	**0.64**	**0.58**	**1.04**	**0.07**	**75%**	**-**
N-30	2	0.77	0.77	0.80	0.75	4%	N-30: 60°/0°
N-30/60°	2	1.12	1.12	1.43	0.80	40%	1.44
W-80-L	4	0.84	0.84	0.86	0.83	2%	W-80: H/L
W-80-M	2	0.85	0.85	0.86	0.84	2%	0.99
W-80-H	2	0.84	0.84	0.85	0.83	2%	
W-110	2	0.81	0.81	0.81	0.81	1%	-
Cs-137	2	1.04	1.04	1.04	1.04	0%	-
photon all	**16**	**0.84**	**0.89**	**1.43**	**0.75**	**19%**	**-**
All	**22**	**0.84**	**0.80**	**1.43**	**0.07**	**36%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

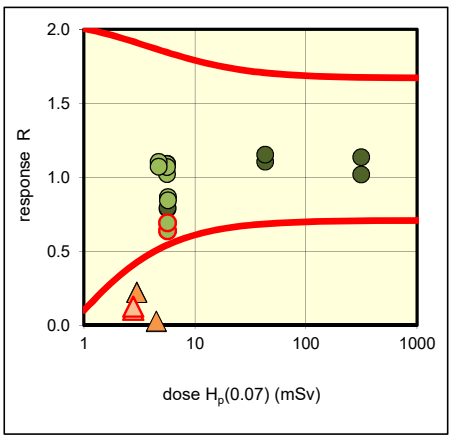
Reporting number 61 : Extremity - photon dosemeter

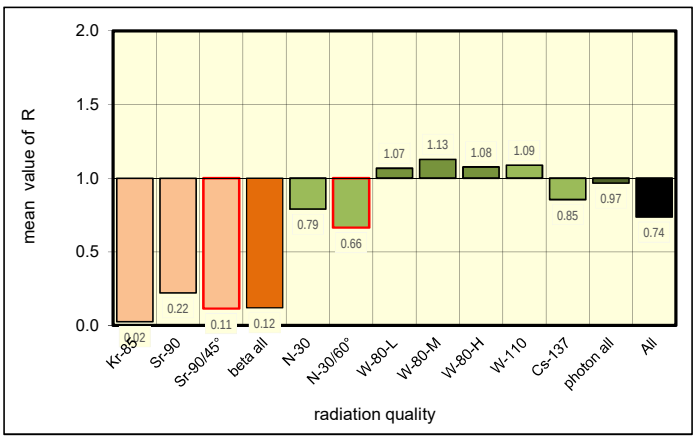
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	16	4.51	0.10	0.02	(outlier)
		25	4.51	0.12	0.03	(outlier)
	Sr-90	14	3.00	0.67	0.22	(outlier)
		28	3.00	0.66	0.22	(outlier)
	Sr-90/45°	18	2.80	0.29	0.10	(outlier)
		21	2.80	0.35	0.13	(outlier)
photon	N-30	27	5.70	4.48	**0.79**	OK
		29	5.70	4.52	**0.79**	OK
	N-30/60°	12	5.70	3.63	**0.64**	OK
		13	5.70	3.94	**0.69**	OK
	W-80-L	1	5.60	6.11	**1.09**	OK
		3	5.60	5.72	**1.02**	OK
		20	5.60	6.09	**1.09**	OK
		22	5.60	5.99	**1.07**	OK
	W-80-M	9	43.0	47.48	**1.10**	OK
		10	43.0	49.52	**1.15**	OK
	W-80-H	4	315	357.23	**1.13**	OK
		5	315	320.61	**1.02**	OK
	W-110	17	4.70	5.19	**1.10**	OK
		19	4.70	5.03	**1.07**	OK
	Cs-137	6	5.70	4.93	**0.86**	OK
		7	5.70	4.81	**0.84**	OK
	NIR	2				**Legend for Quality**
	NIR	8				L ……. low dose
	NIR	11				M …… medium dose
	NIR	15				H ……. high dose
	NIR	23				NIR ….. not irradiated
	NIR	24				WIR …. wrongly irradiated
	NIR	26				
	NIR	30				
	NIR	31				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.02	0.02	0.03	0.02	13%	-
Sr-90	2	0.22	0.22	0.22	0.22	1%	Sr-90: 45°/0°
Sr-90/45°	2	0.11	0.11	0.13	0.10	13%	0.52
beta all	6	0.11	0.12	0.22	0.02	74%	-
N-30	2	0.79	0.79	0.79	0.79	1%	**N-30: 60°/0°**
N-30/60°	2	0.66	0.66	0.69	0.64	6%	0.84
W-80-L	4	1.08	1.07	1.09	1.02	3%	**W-80: H/L**
W-80-M	2	1.13	1.13	1.15	1.10	3%	1.01
W-80-H	2	1.08	1.08	1.13	1.02	8%	
W-110	2	1.09	1.09	1.10	1.07	2%	-
Cs-137	2	0.85	0.85	0.86	0.84	2%	-
photon all	**16**	**1.05**	**0.97**	**1.15**	**0.64**	**18%**	**-**
All	22	0.85	0.74	1.15	0.02	56%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

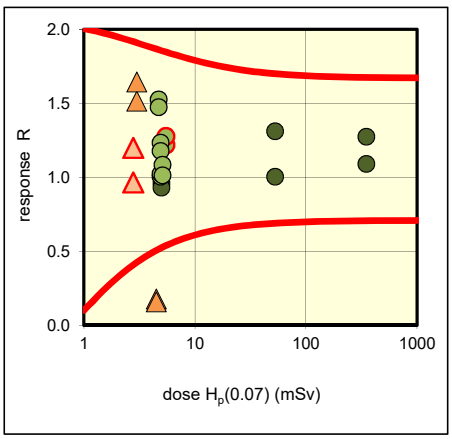
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

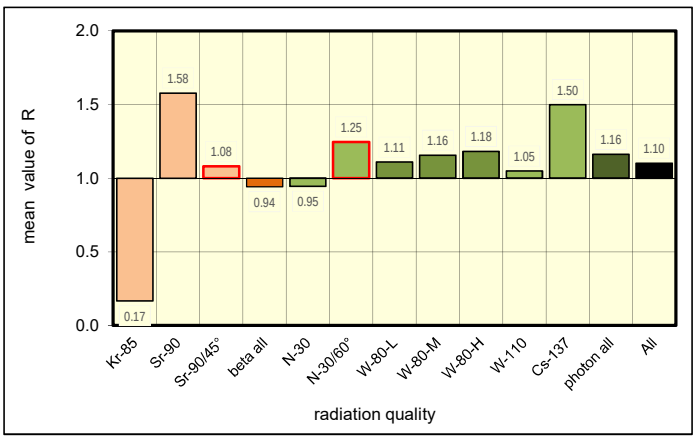
Reporting number 62 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	1	4.51	0.80	**0.18**	outlier
		27	4.51	0.71	**0.16**	outlier
	Sr-90	13	3.00	4.54	**1.51**	OK
		16	3.00	4.93	**1.64**	OK
	Sr-90/45°	3	2.80	2.70	**0.96**	OK
		8	2.80	3.35	**1.20**	OK
photon	N-30	14	5.00	4.80	**0.96**	OK
		15	5.00	4.65	**0.93**	OK
	N-30/60°	30	5.50	6.69	**1.22**	OK
		31	5.50	7.01	**1.27**	OK
	W-80-L	4	4.90	6.04	**1.23**	OK
		9	4.90	4.92	**1.00**	OK
		20	4.90	5.77	**1.18**	OK
		26	4.90	5.01	**1.02**	OK
	W-80-M	19	53.0	53.13	**1.00**	OK
		29	53.0	69.37	**1.31**	OK
	W-80-H	21	350	381.04	**1.09**	OK
		22	350	445.87	**1.27**	OK
	W-110	2	5.10	5.53	**1.08**	OK
		18	5.10	5.16	**1.01**	OK
	Cs-137	6	4.70	7.17	**1.53**	OK
		7	4.70	6.92	**1.47**	OK
	NIR	5				**Legend for Quality**
	NIR	10				L ……. low dose
	NIR	11				M …… medium dose
	NIR	12				H ……. high dose
	NIR	17				NIR ….. not irradiated
	NIR	23				WIR …. wrongly irradiated
	NIR	24				
	NIR	25				
	NIR	28				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.17	0.17	0.18	0.16	8%	-
Sr-90	2	1.58	1.58	1.64	1.51	6%	Sr-90: 45°/0°
Sr-90/45°	2	1.08	1.08	1.20	0.96	15%	0.68
beta all	**6**	**1.08**	**0.94**	**1.64**	**0.16**	**69%**	**-**
N-30	2	0.95	0.95	0.96	0.93	2%	N-30: 60°/0°
N-30/60°	2	1.25	1.25	1.27	1.22	3%	1.32
W-80-L	4	1.10	1.11	1.23	1.00	10%	W-80: H/L
W-80-M	2	1.16	1.16	1.31	1.00	19%	1.07
W-80-H	2	1.18	1.18	1.27	1.09	11%	
W-110	2	1.05	1.05	1.08	1.01	5%	-
Cs-137	2	1.50	1.50	1.53	1.47	3%	-
photon all	**16**	**1.13**	**1.16**	**1.53**	**0.93**	**15%**	**-**
All	**22**	**1.13**	**1.10**	**1.64**	**0.16**	**33%**	**-**

outliers: 2 of 22 fraction of outliers: 9%





Results: $IC2019_{ext\ eye}$

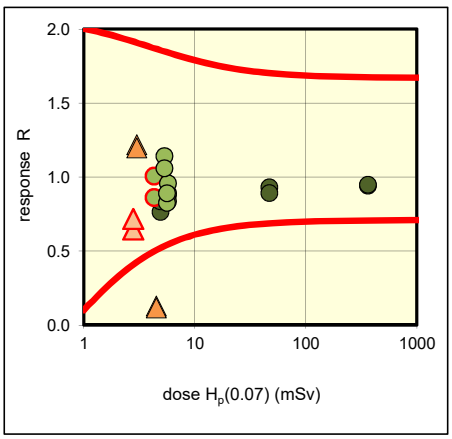
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

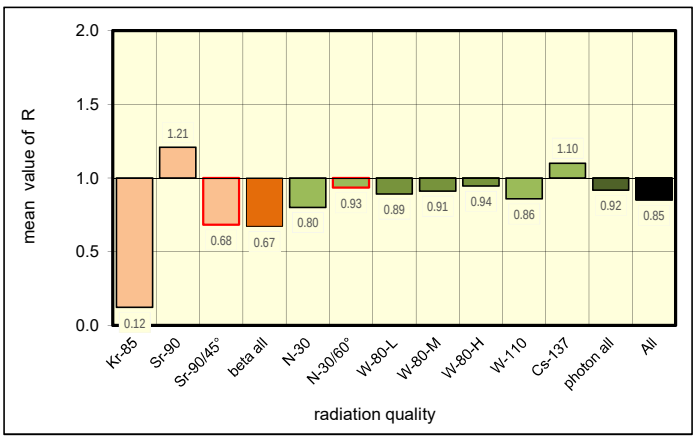
Reporting number 63 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	14	4.51	0.58	**0.13**	outlier
		31	4.51	0.52	**0.12**	outlier
	Sr-90	22	3.00	3.66	**1.22**	OK
		30	3.00	3.59	**1.20**	OK
	Sr-90/45°	13	2.80	1.81	**0.65**	OK
		32	2.80	2.01	**0.72**	OK
photon	N-30	27	4.90	3.75	**0.77**	OK
		28	4.90	4.10	**0.84**	OK
	N-30/60°	1	4.30	3.71	**0.86**	OK
		3	4.30	4.33	**1.01**	OK
	W-80-L	2	5.70	5.03	**0.88**	OK
		7	5.70	5.08	**0.89**	OK
		20	5.70	5.46	**0.96**	OK
		21	5.70	4.77	**0.84**	OK
	W-80-M	15	47.0	43.76	**0.93**	OK
		17	47.0	41.96	**0.89**	OK
	W-80-H	18	362	340.72	**0.94**	OK
		19	362	343.20	**0.95**	OK
	W-110	8	5.60	4.63	**0.83**	OK
		10	5.60	4.99	**0.89**	OK
	Cs-137	4	5.30	6.05	**1.14**	OK
		5	5.30	5.62	**1.06**	OK
	NIR	6				Legend for Quality
	NIR	9				L ..... low dose
	NIR	11				M ..... medium dose
	NIR	12				H ..... high dose
	NIR	16				NIR ..... not irradiated
	NIR	23				WIR .... wrongly irradiated
	NIR	24				
	NIR	25				
	NIR	26				
	NIR	29				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.12	0.12	0.13	0.12	8%	-
Sr-90	2	1.21	1.21	1.22	1.20	1%	Sr-90: 45°/0°
Sr-90/45°	2	0.68	0.68	0.72	0.65	7%	0.56
beta all	**6**	**0.68**	**0.67**	**1.22**	**0.12**	**73%**	**-**
N-30	2	0.80	0.80	0.84	0.77	6%	N-30: 60°/0°
N-30/60°	2	0.93	0.93	1.01	0.86	11%	1.17
W-80-L	4	0.89	0.89	0.96	0.84	6%	W-80: H/L
W-80-M	2	0.91	0.91	0.93	0.89	3%	1.06
W-80-H	2	0.94	0.94	0.95	0.94	1%	
W-110	2	0.86	0.86	0.89	0.83	5%	-
Cs-137	2	1.10	1.10	1.14	1.06	5%	-
photon all	**16**	**0.89**	**0.92**	**1.14**	**0.77**	**10%**	**-**
All	**22**	**0.89**	**0.85**	**1.22**	**0.12**	**32%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

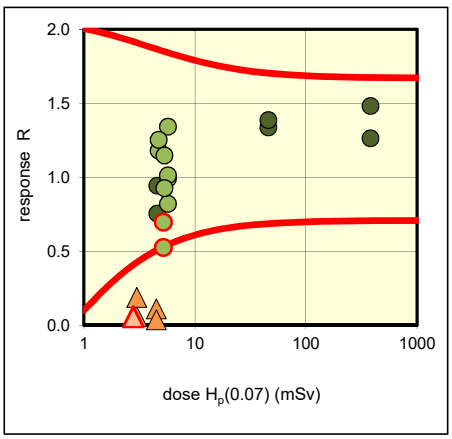
Reporting number 64 : Extremity - photon dosemeter

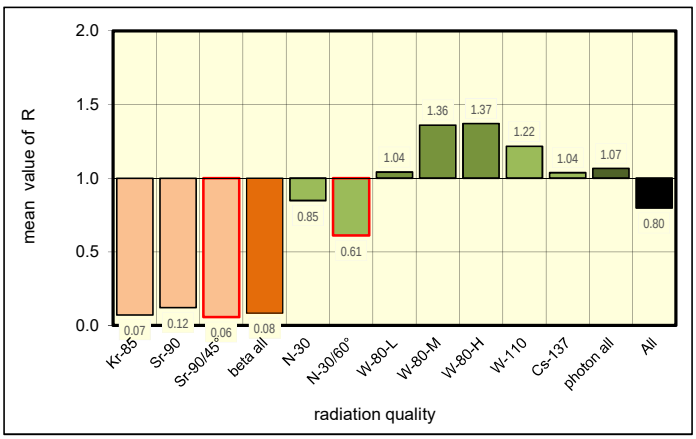
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	20	4.51	0.49	0.11	(outlier)
		26	4.51	0.16	0.04	(outlier)
	Sr-90	10	3.00	0.17	0.06	(outlier)
		22	3.00	0.56	0.19	(outlier)
	Sr-90/45°	24	2.80	0.17	0.06	(outlier)
		25	2.80	0.15	0.05	(outlier)
photon	N-30	13	4.60	4.33	**0.94**	OK
		14	4.60	3.47	**0.75**	OK
	N-30/60°	27	5.20	3.62	**0.70**	OK
		32	5.20	2.73	**0.53**	outlier
	W-80-L	12	5.70	7.64	**1.34**	OK
		15	5.70	5.65	**0.99**	OK
		29	5.70	4.68	**0.82**	OK
		30	5.70	5.77	**1.01**	OK
	W-80-M	7	46.0	61.43	**1.34**	OK
		8	46.0	63.73	**1.39**	OK
	W-80-H	5	382	565.40	**1.48**	OK
		6	382	481.94	**1.26**	OK
	W-110	16	4.70	5.54	**1.18**	OK
		17	4.70	5.89	**1.25**	OK
	Cs-137	3	5.30	6.08	**1.15**	OK
		4	5.30	4.91	**0.93**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	9				M …… medium dose
	NIR	11				H ……. high dose
	NIR	18				NIR ….. not irradiated
	NIR	19				WIR …. wrongly irradiated
	NIR	21				
	NIR	23				
	NIR	28				
	NIR	31				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.07	0.07	0.11	0.04	72%	-
Sr-90	2	0.12	0.12	0.19	0.06	76%	Sr-90: 45°/0°
Sr-90/45°	2	0.06	0.06	0.06	0.05	9%	0.47
beta all	6	0.06	0.08	0.19	0.04	67%	-
N-30	2	0.85	0.85	0.94	0.75	16%	**N-30: 60°/0°**
N-30/60°	2	0.61	0.61	0.70	0.53	20%	0.72
W-80-L	4	1.00	1.04	1.34	0.82	21%	**W-80: H/L**
W-80-M	2	1.36	1.36	1.39	1.34	3%	1.32
W-80-H	2	1.37	1.37	1.48	1.26	11%	
W-110	2	1.22	1.22	1.25	1.18	4%	-
Cs-137	2	1.04	1.04	1.15	0.93	15%	-
photon all	**16**	**1.08**	**1.07**	**1.48**	**0.53**	**26%**	**-**
All	22	0.93	0.80	1.48	0.04	63%	-

outliers: 1 of 16 **fraction of outliers: 6%**





Results: $IC2019_{ext\ eye}$

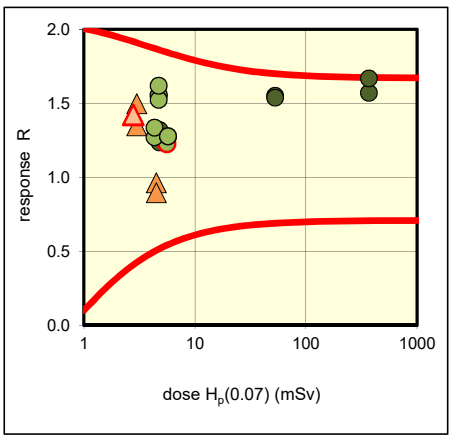
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

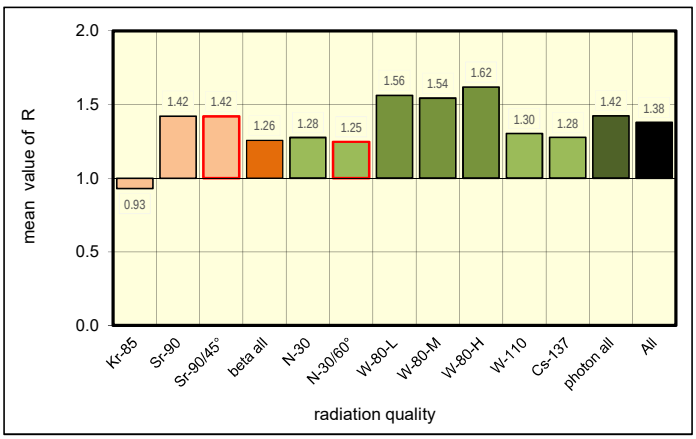
Reporting number 65 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	20	4.51	4.34	**0.96**	OK
		21	4.51	4.04	**0.90**	OK
	Sr-90	9	3.00	4.49	**1.50**	OK
		19	3.00	4.04	**1.35**	OK
	Sr-90/45°	15	2.80	3.97	**1.42**	OK
		25	2.80	3.98	**1.42**	OK
photon	N-30	18	4.80	6.33	**1.32**	OK
		23	4.80	5.92	**1.23**	OK
	N-30/60°	1	5.60	7.10	**1.27**	OK
		26	5.60	6.86	**1.23**	OK
	W-80-L	4	4.70	7.30	**1.55**	OK
		5	4.70	7.31	**1.56**	OK
		14	4.70	7.16	**1.52**	OK
		16	4.70	7.60	**1.62**	OK
	W-80-M	31	53.0	82.17	**1.55**	OK
		32	53.0	81.42	**1.54**	OK
	W-80-H	10	370	580.60	**1.57**	OK
		11	370	617.00	**1.67**	OK
	W-110	3	4.30	5.46	**1.27**	OK
		7	4.30	5.74	**1.33**	OK
	Cs-137	8	5.70	7.27	**1.28**	OK
		12	5.70	7.28	**1.28**	OK
	NIR	2				**Legend for Quality**
	NIR	6				L ……. low dose
	NIR	13				M …… medium dose
	NIR	17				H ……. high dose
	NIR	28				NIR ….. not irradiated
	NIR	29				WIR …. wrongly irradiated
	NIR	30				
	WIR	22				
	WIR	24				
	WIR	27				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.93	0.93	0.96	0.90	5%	-
Sr-90	2	1.42	1.42	1.50	1.35	7%	Sr-90: 45°/0°
Sr-90/45°	2	1.42	1.42	1.42	1.42	0%	1.00
beta all	**6**	**1.38**	**1.26**	**1.50**	**0.90**	**21%**	**-**
N-30	2	1.28	1.28	1.32	1.23	5%	N-30: 60°/0°
N-30/60°	2	1.25	1.25	1.27	1.23	2%	0.98
W-80-L	4	1.55	1.56	1.62	1.52	3%	W-80: H/L
W-80-M	2	1.54	1.54	1.55	1.54	1%	1.04
W-80-H	2	1.62	1.62	1.67	1.57	4%	
W-110	2	1.30	1.30	1.33	1.27	4%	-
Cs-137	2	1.28	1.28	1.28	1.28	0%	-
photon all	**16**	**1.43**	**1.42**	**1.67**	**1.23**	**11%**	**-**
All	**22**	**1.38**	**1.38**	**1.67**	**0.90**	**14%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

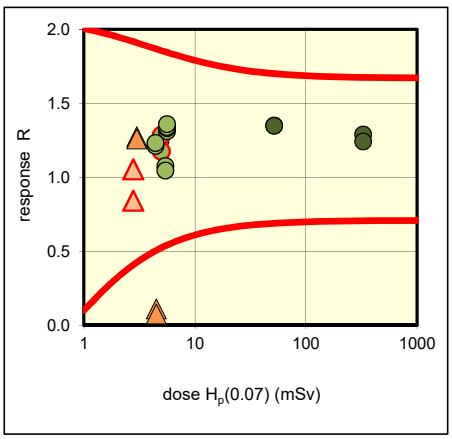
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

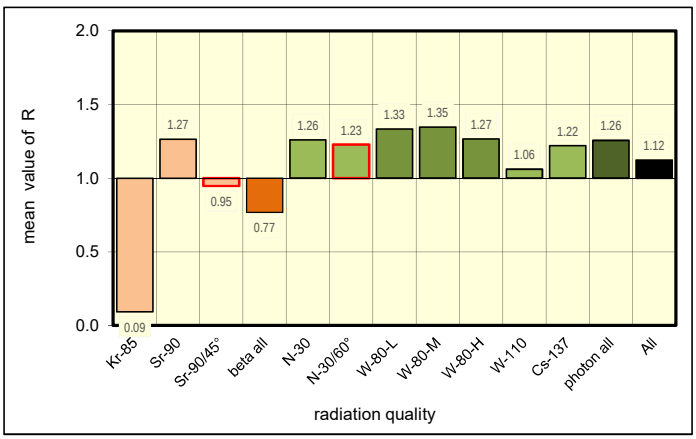
Reporting number 66 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	13	4.51	0.49	**0.11**	outlier
		29	4.51	0.34	**0.07**	outlier
	Sr-90	12	3.00	3.82	**1.27**	OK
		20	3.00	3.77	**1.26**	OK
	Sr-90/45°	17	2.80	2.95	**1.05**	OK
		18	2.80	2.36	**0.84**	OK
photon	N-30	27	4.90	6.25	**1.27**	OK
		28	4.90	6.10	**1.25**	OK
	N-30/60°	19	5.00	6.42	**1.28**	OK
		21	5.00	5.87	**1.17**	OK
	W-80-L	6	5.60	7.34	**1.31**	OK
		10	5.60	7.45	**1.33**	OK
		15	5.60	7.49	**1.34**	OK
		16	5.60	7.61	**1.36**	OK
	W-80-M	31	52.0	70.14	**1.35**	OK
		32	52.0	69.97	**1.35**	OK
	W-80-H	3	329	423.99	**1.29**	OK
		4	329	408.54	**1.24**	OK
	W-110	22	5.40	5.81	**1.08**	OK
		23	5.40	5.65	**1.05**	OK
	Cs-137	8	4.40	5.33	**1.21**	OK
		9	4.40	5.42	**1.23**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ..... low dose
	NIR	5				M ..... medium dose
	NIR	7				H ..... high dose
	NIR	11				NIR ..... not irradiated
	NIR	14				WIR .... wrongly irradiated
	NIR	24				
	NIR	25				
	NIR	26				
	NIR	30				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.09	0.09	0.11	0.07	26%	-
Sr-90	2	1.27	1.27	1.27	1.26	1%	Sr-90: 45°/0°
Sr-90/45°	2	0.95	0.95	1.05	0.84	16%	0.75
beta all	**6**	**0.95**	**0.77**	**1.27**	**0.07**	**71%**	**-**
N-30	2	1.26	1.26	1.27	1.25	2%	N-30: 60°/0°
N-30/60°	2	1.23	1.23	1.28	1.17	6%	0.97
W-80-L	4	1.33	1.33	1.36	1.31	2%	W-80: H/L
W-80-M	2	1.35	1.35	1.35	1.35	0%	0.95
W-80-H	2	1.27	1.27	1.29	1.24	3%	
W-110	2	1.06	1.06	1.08	1.05	2%	-
Cs-137	2	1.22	1.22	1.23	1.21	1%	-
photon all	**16**	**1.28**	**1.26**	**1.36**	**1.05**	**7%**	**-**
All	**22**	**1.25**	**1.12**	**1.36**	**0.07**	**32%**	**-**

outliers: 2 of 22 fraction of outliers: 9%





Results: IC2019$_{ext\ eye}$

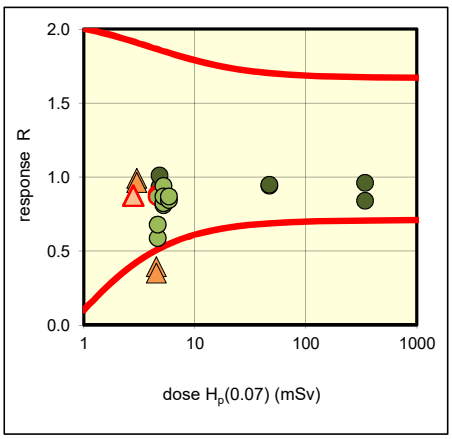
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

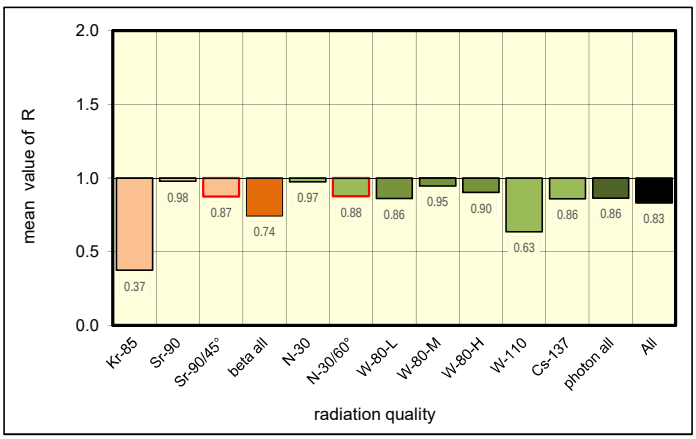
Reporting number 67 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	2	4.51	1.79	**0.40**	outlier
		17	4.51	1.58	**0.35**	outlier
	Sr-90	1	3.00	2.98	**0.99**	OK
		32	3.00	2.89	**0.96**	OK
	Sr-90/45°	28	2.80	2.45	**0.88**	OK
		30	2.80	2.44	**0.87**	OK
photon	N-30	8	4.80	4.48	**0.93**	OK
		9	4.80	4.86	**1.01**	OK
	N-30/60°	22	4.60	4.07	**0.88**	OK
		24	4.60	4.00	**0.87**	OK
	W-80-L	5	5.20	4.22	**0.81**	OK
		6	5.20	4.28	**0.82**	OK
		27	5.20	4.89	**0.94**	OK
		29	5.20	4.52	**0.87**	OK
	W-80-M	10	47.0	44.27	**0.94**	OK
		11	47.0	44.62	**0.95**	OK
	W-80-H	15	341	328.30	**0.96**	OK
		16	341	286.80	**0.84**	OK
	W-110	20	4.60	2.71	**0.59**	OK
		21	4.60	3.13	**0.68**	OK
	Cs-137	3	5.80	4.91	**0.85**	OK
		4	5.80	5.05	**0.87**	OK
	NIR	7				Legend for Quality
	NIR	12				L ..... low dose
	NIR	13				M ..... medium dose
	NIR	14				H ..... high dose
	NIR	18				NIR ..... not irradiated
	NIR	19				WIR .... wrongly irradiated
	NIR	23				
	NIR	25				
	NIR	26				
	NIR	31				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.37	0.37	0.40	0.35	9%	-
Sr-90	2	0.98	0.98	0.99	0.96	2%	Sr-90: 45°/0°
Sr-90/45°	2	0.87	0.87	0.88	0.87	0%	0.89
beta all	**6**	**0.87**	**0.74**	**0.99**	**0.35**	**39%**	**-**
N-30	2	0.97	0.97	1.01	0.93	6%	N-30: 60°/0°
N-30/60°	2	0.88	0.88	0.88	0.87	1%	0.90
W-80-L	4	0.85	0.86	0.94	0.81	7%	W-80: H/L
W-80-M	2	0.95	0.95	0.95	0.94	1%	1.05
W-80-H	2	0.90	0.90	0.96	0.84	10%	
W-110	2	0.63	0.63	0.68	0.59	10%	-
Cs-137	2	0.86	0.86	0.87	0.85	2%	-
photon all	**16**	**0.87**	**0.86**	**1.01**	**0.59**	**12%**	**-**
All	**22**	**0.87**	**0.83**	**1.01**	**0.35**	**21%**	**-**

outliers: 2 of 22 **fraction of outliers: 9%**





Results: $IC2019_{ext\ eye}$

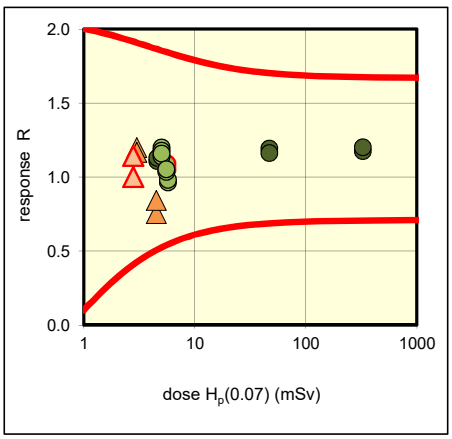
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

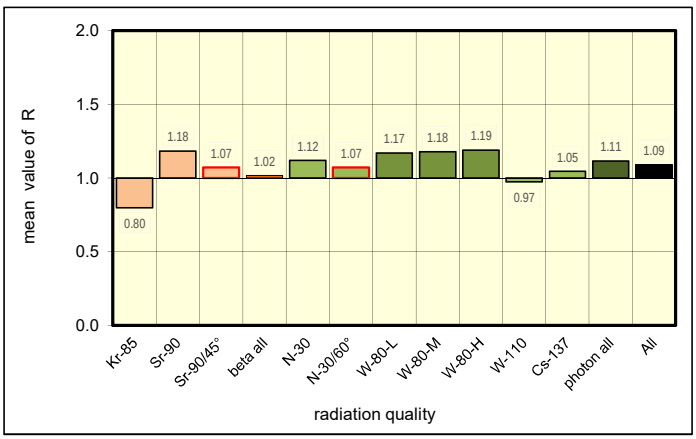
Reporting number 68 : Extremity - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(0.07)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Kr-85	8	4.51	3.40	**0.75**	OK
		20	4.51	3.80	**0.84**	OK
	Sr-90	7	3.00	3.60	**1.20**	OK
		17	3.00	3.50	**1.17**	OK
	Sr-90/45°	23	2.80	3.20	**1.14**	OK
		27	2.80	2.80	**1.00**	OK
photon	N-30	30	4.60	5.10	**1.11**	OK
		31	4.60	5.20	**1.13**	OK
	N-30/60°	22	5.60	5.90	**1.05**	OK
		24	5.60	6.10	**1.09**	OK
	W-80-L	3	5.00	5.70	**1.14**	OK
		9	5.00	6.00	**1.20**	OK
		14	5.00	5.90	**1.18**	OK
		15	5.00	5.80	**1.16**	OK
	W-80-M	12	47.0	56.10	**1.19**	OK
		13	47.0	54.70	**1.16**	OK
	W-80-H	10	327	384.50	**1.18**	OK
		11	327	393.10	**1.20**	OK
	W-110	18	5.70	5.50	**0.96**	OK
		19	5.70	5.60	**0.98**	OK
	Cs-137	5	5.50	5.70	**1.04**	OK
		6	5.50	5.80	**1.05**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	4				M …… medium dose
	NIR	16				H ……. high dose
	NIR	21				NIR ….. not irradiated
	NIR	25				WIR …. wrongly irradiated
	NIR	26				
	NIR	28				
	NIR	29				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Kr-85	2	0.80	0.80	0.84	0.75	8%	-
Sr-90	2	1.18	1.18	1.20	1.17	2%	Sr-90: 45°/0°
Sr-90/45°	2	1.07	1.07	1.14	1.00	9%	0.91
beta all	**6**	**1.07**	**1.02**	**1.20**	**0.75**	**18%**	**-**
N-30	2	1.12	1.12	1.13	1.11	1%	N-30: 60°/0°
N-30/60°	2	1.07	1.07	1.09	1.05	2%	0.96
W-80-L	4	1.17	1.17	1.20	1.14	2%	W-80: H/L
W-80-M	2	1.18	1.18	1.19	1.16	2%	1.02
W-80-H	2	1.19	1.19	1.20	1.18	2%	
W-110	2	0.97	0.97	0.98	0.96	1%	-
Cs-137	2	1.05	1.05	1.05	1.04	1%	-
photon all	**16**	**1.14**	**1.11**	**1.20**	**0.96**	**7%**	**-**
All	**22**	**1.14**	**1.09**	**1.20**	**0.75**	**11%**	**-**

outliers: 0 of 22 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 1.0 mSv

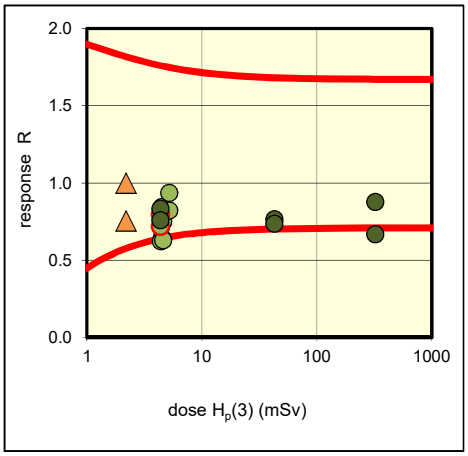
Reporting number 69 : Eye - photon dosemeter

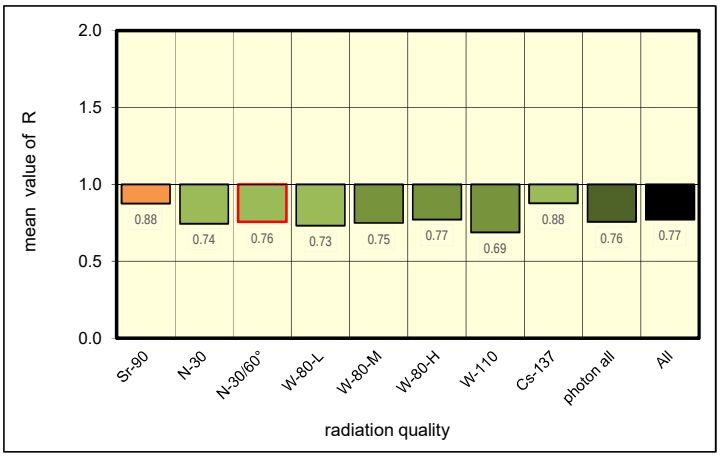
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	11	2.20	2.19	1.00	(OK)
		31	2.20	1.66	0.75	(OK)
photon	N-30	7	4.50	2.91	**0.65**	OK
		8	4.50	3.80	**0.84**	OK
	N-30/60°	29	4.40	3.49	**0.79**	OK
		30	4.40	3.16	**0.72**	OK
	W-80-L	15	4.40	3.66	**0.83**	OK
		16	4.40	3.15	**0.72**	OK
		26	4.40	3.33	**0.76**	OK
		28	4.40	2.74	**0.62**	outlier
	W-80-M	12	43.0	32.84	**0.76**	OK
		13	43.0	31.61	**0.74**	OK
	W-80-H	1	324	283.46	**0.87**	OK
		2	324	216.09	**0.67**	outlier
	W-110	5	4.60	3.44	**0.75**	OK
		6	4.60	2.89	**0.63**	outlier
	Cs-137	24	5.20	4.27	**0.82**	OK
		25	5.20	4.86	**0.93**	OK
	NIR	3				**Legend for Quality**
	NIR	4				L ……. low dose
	NIR	9				M …… medium dose
	NIR	10				H ……. high dose
	NIR	14				NIR ….. not irradiated
	NIR	17				WIR …. wrongly irradiated
	NIR	18				
	NIR	19				
	NIR	20				
	NIR	21				
	NIR	22				
	NIR	23				
	NIR	27				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.88	0.88	1.00	0.75	20%	-
N-30	2	0.74	0.74	0.84	0.65	19%	**N-30: 60°/0°**
N-30/60°	2	0.76	0.76	0.79	0.72	7%	1.01
W-80-L	4	0.74	0.73	0.83	0.62	12%	**W-80: H/L**
W-80-M	2	0.75	0.75	0.76	0.74	3%	1.02
W-80-H	2	0.77	0.77	0.87	0.67	19%	
W-110	2	0.69	0.69	0.75	0.63	12%	-
Cs-137	2	0.88	0.88	0.93	0.82	9%	-
photon all	**16**	**0.75**	**0.76**	**0.93**	**0.62**	**12%**	**-**
All	18	0.76	0.77	1.00	0.62	13%	-

outliers: 3 of 16 fraction of outliers: 19%





Results: $IC2019_{ext\ eye}$

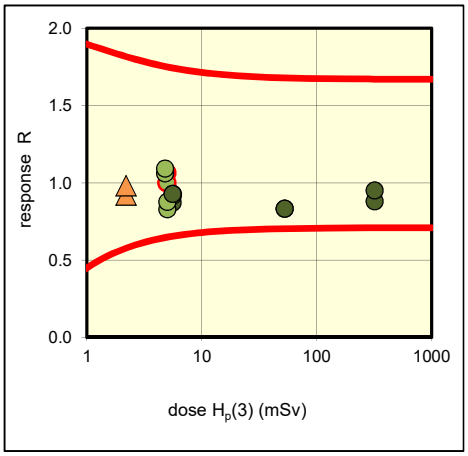
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

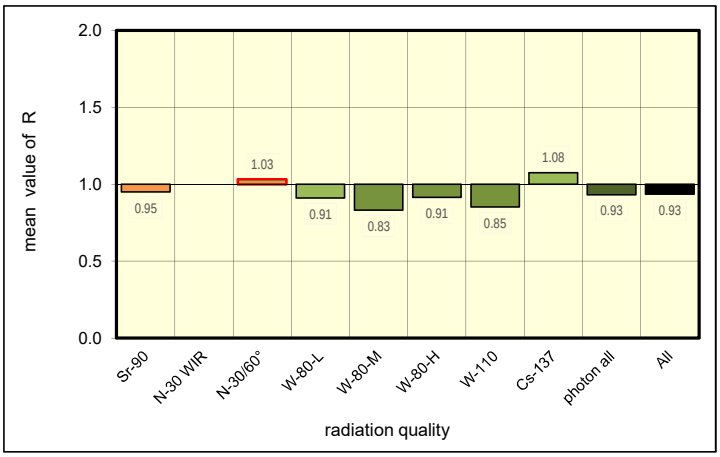
Reporting number 70 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	9	2.20	2.03	**0.92**	OK
		21	2.20	2.16	**0.98**	OK
photon	N-30 WIR					WIR
						WIR
	N-30/60°	26	5.00	5.32	**1.06**	OK
		28	5.00	5.00	**1.00**	OK
	W-80-L	6	5.60	4.88	**0.87**	OK
		8	5.60	5.13	**0.92**	OK
		30	5.60	5.19	**0.93**	OK
		31	5.60	5.19	**0.93**	OK
	W-80-M	20	53.0	44.09	**0.83**	OK
		22	53.0	44.06	**0.83**	OK
	W-80-H	14	320	281.38	**0.88**	OK
		15	320	303.67	**0.95**	OK
	W-110	1	5.00	4.14	**0.83**	OK
		2	5.00	4.38	**0.88**	OK
	Cs-137	16	4.80	5.09	**1.06**	OK
		17	4.80	5.24	**1.09**	OK
	NIR	3				**Legend for Quality**
	NIR	4				L ……. low dose
	NIR	5				M …… medium dose
	NIR	7				H ……. high dose
	NIR	12				NIR ….. not irradiated
	NIR	13				WIR …. wrongly irradiated
	NIR	18				
	NIR	19				
	NIR	23				
	NIR	24				
	NIR	25				
	NIR	27				
	NIR	29				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.95	0.95	0.98	0.92	4%	-
N-30 WIR	0						
N-30/60°	2	1.03	1.03	1.06	1.00	4%	
W-80-L	4	0.92	0.91	0.93	0.87	3%	W-80: H/L
W-80-M	2	0.83	0.83	0.83	0.83	0%	0.91
W-80-H	2	0.91	0.91	0.95	0.88	5%	
W-110	2	0.85	0.85	0.88	0.83	4%	-
Cs-137	2	1.08	1.08	1.09	1.06	2%	-
photon all	**14**	**0.92**	**0.93**	**1.09**	**0.83**	**10%**	**-**
All	**16**	**0.92**	**0.93**	**1.09**	**0.83**	**9%**	**-**

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

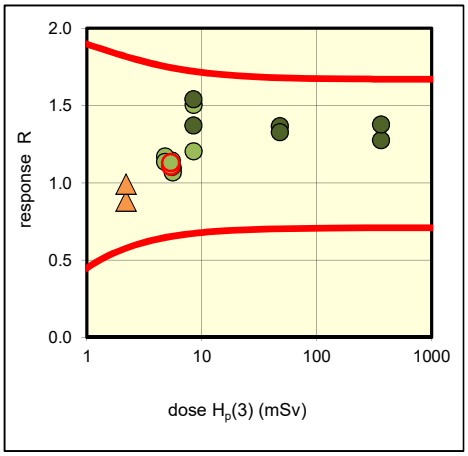
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

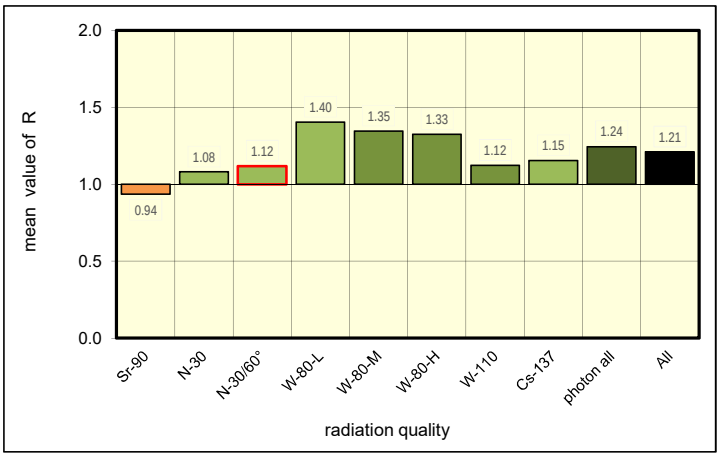
Reporting number 71 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	7	2.20	1.94	**0.88**	OK
		17	2.20	2.18	**0.99**	OK
photon	N-30	20	5.60	6.13	**1.09**	OK
		21	5.60	5.97	**1.07**	OK
	N-30/60°	4	5.40	5.98	**1.11**	OK
		5	5.40	6.10	**1.13**	OK
	W-80-L	2	8.50	13.09	**1.54**	OK
		3	8.50	12.79	**1.50**	OK
		11	8.50	11.64	**1.37**	OK
		15	8.50	10.23	**1.20**	OK
	W-80-M	26	48.0	65.57	**1.37**	OK
		28	48.0	63.65	**1.33**	OK
	W-80-H	22	364	463.81	**1.27**	OK
		24	364	501.23	**1.38**	OK
	W-110	13	5.50	6.06	**1.10**	OK
		14	5.50	6.29	**1.14**	OK
	Cs-137	30	4.80	5.62	**1.17**	OK
		31	4.80	5.45	**1.14**	OK
	NIR	1				**Legend for Quality**
	NIR	6				L ……. low dose
	NIR	8				M …… medium dose
	NIR	9				H ……. high dose
	NIR	10				NIR ….. not irradiated
	NIR	12				WIR …. wrongly irradiated
	NIR	16				
	NIR	18				
	NIR	19				
	NIR	23				
	NIR	25				
	NIR	27				
	NIR	29				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.94	0.94	0.99	0.88	8%	-
N-30	2	1.08	1.08	1.09	1.07	2%	N-30: 60°/0°
N-30/60°	2	1.12	1.12	1.13	1.11	1%	1.04
W-80-L	4	1.44	1.40	1.54	1.20	11%	W-80: H/L
W-80-M	2	1.35	1.35	1.37	1.33	2%	0.96
W-80-H	2	1.33	1.33	1.38	1.27	5%	
W-110	2	1.12	1.12	1.14	1.10	3%	-
Cs-137	2	1.15	1.15	1.17	1.14	2%	-
photon all	**16**	**1.19**	**1.24**	**1.54**	**1.07**	**12%**	**-**
All	**18**	**1.16**	**1.21**	**1.54**	**0.88**	**14%**	**-**

outliers: 0 of 18 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

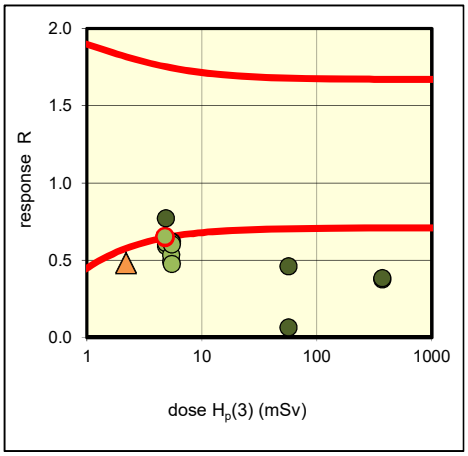
Reporting number 72 : Eye - photon dosemeter

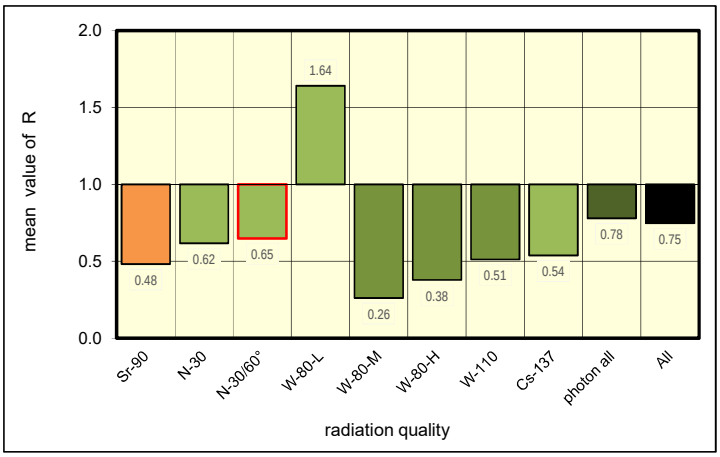
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	11	2.20	1.07	0.49	(outlier)
		12	2.20	1.05	0.48	(outlier)
photon	N-30	25	5.50	3.41	**0.62**	outlier
		26	5.50	3.37	**0.61**	outlier
	N-30/60°	20	4.80	3.10	**0.65**	outlier
		21	4.80	3.13	**0.65**	OK
	W-80-L	15	4.90	22.52	**4.60**	outlier
		17	4.90	2.89	**0.59**	outlier
		23	4.90	3.77	**0.77**	OK
		24	4.90	2.99	**0.61**	outlier
	W-80-M	1	57.0	3.60	**0.06**	outlier
		4	57.0	26.19	**0.46**	outlier
	W-80-H	18	375	140.63	**0.38**	outlier
		19	375	143.35	**0.38**	outlier
	W-110	29	5.40	2.65	**0.49**	outlier
		30	5.40	2.88	**0.53**	outlier
	Cs-137	5	5.50	3.31	**0.60**	outlier
		7	5.50	2.61	**0.47**	outlier
	NIR	2				**Legend for Quality**
	NIR	3				L ……. low dose
	NIR	6				M …… medium dose
	NIR	8				H ……. high dose
	NIR	9				NIR ….. not irradiated
	NIR	10				WIR …. wrongly irradiated
	NIR	13				
	NIR	14				
	NIR	16				
	NIR	22				
	NIR	27				
	NIR	28				
	NIR	31				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.48	0.48	0.49	0.48	1%	-
N-30	2	0.62	0.62	0.62	0.61	1%	**N-30: 60°/0°**
N-30/60°	2	0.65	0.65	0.65	0.65	1%	1.05
W-80-L	4	0.69	1.64	4.60	0.59	120%	**W-80: H/L**
W-80-M	2	0.26	0.26	0.46	0.06	107%	0.16
W-80-H	2	0.38	0.38	0.38	0.38	1%	
W-110	2	0.51	0.51	0.53	0.49	6%	-
Cs-137	2	0.54	0.54	0.60	0.47	17%	-
photon all	**16**	**0.60**	**0.78**	**4.60**	**0.06**	**132%**	**-**
All	18	0.56	0.75	4.60	0.06	130%	-

outliers: 14 of 16 **fraction of outliers: 88%**





Results: IC2019$_{ext\ eye}$ 1 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

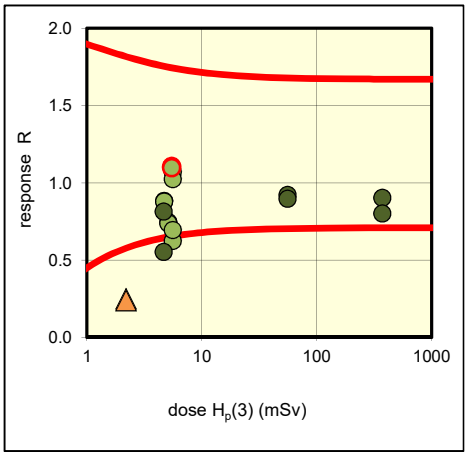
Reporting number 73 : Eye - photon dosemeter

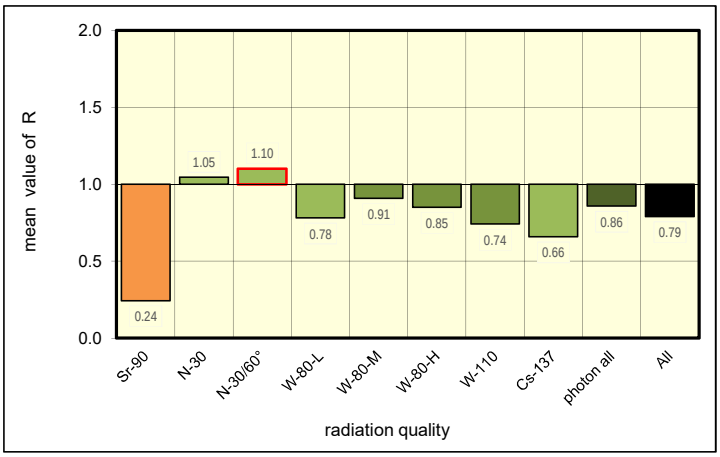
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	5	2.20	0.55	0.25	(outlier)
		20	2.20	0.52	0.24	(outlier)
photon	N-30	19	5.60	5.99	**1.07**	OK
		21	5.60	5.73	**1.02**	OK
	N-30/60°	22	5.50	6.08	**1.11**	OK
		23	5.50	6.03	**1.10**	OK
	W-80-L	10	4.70	3.83	**0.81**	OK
		12	4.70	4.14	**0.88**	OK
		24	4.70	2.59	**0.55**	outlier
		25	4.70	4.13	**0.88**	OK
	W-80-M	31	56.0	51.54	**0.92**	OK
		32	56.0	50.15	**0.90**	OK
	W-80-H	3	375	338.02	**0.90**	OK
		6	375	299.94	**0.80**	OK
	W-110	14	5.10	3.80	**0.75**	OK
		18	5.10	3.76	**0.74**	OK
	Cs-137	15	5.60	3.49	**0.62**	outlier
		16	5.60	3.89	**0.69**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	4				M …… medium dose
	NIR	7				H ……. high dose
	NIR	8				NIR ….. not irradiated
	NIR	9				WIR …. wrongly irradiated
	NIR	11				
	NIR	13				
	NIR	17				
	NIR	26				
	NIR	27				
	NIR	28				
	NIR	29				
	NIR	30				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.24	0.24	0.25	0.24	3%	-
N-30	2	1.05	1.05	1.07	1.02	3%	**N-30: 60°/0°**
N-30/60°	2	1.10	1.10	1.11	1.10	1%	1.05
W-80-L	4	0.85	0.78	0.88	0.55	20%	**W-80: H/L**
W-80-M	2	0.91	0.91	0.92	0.90	2%	1.16
W-80-H	2	0.85	0.85	0.90	0.80	8%	
W-110	2	0.74	0.74	0.75	0.74	1%	-
Cs-137	2	0.66	0.66	0.69	0.62	8%	-
photon all	**16**	**0.88**	**0.86**	**1.11**	**0.55**	**19%**	**-**
All	18	0.85	0.79	1.11	0.24	32%	-

outliers: 2 of 16 fraction of outliers: 13%





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

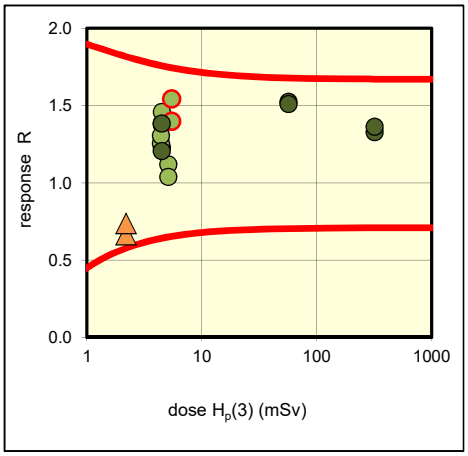
Reporting number 74 : Eye - photon dosemeter

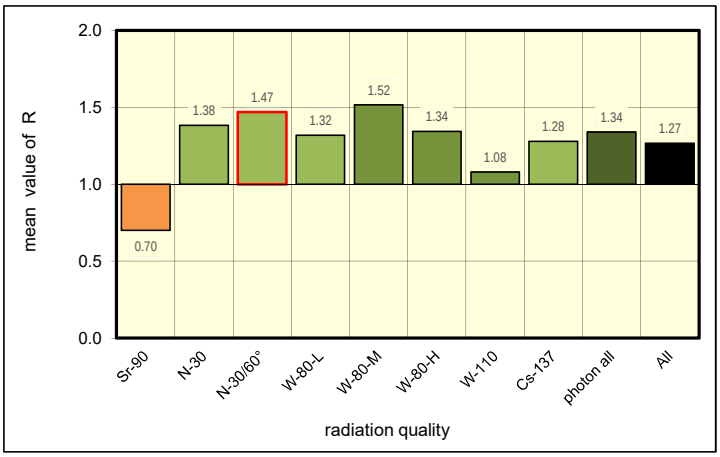
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	4	2.20	1.46	0.66	(OK)
		32	2.20	1.62	0.74	(OK)
photon	N-30	21	4.50	6.25	**1.39**	OK
		26	4.50	6.19	**1.38**	OK
	N-30/60°	25	5.50	7.69	**1.40**	OK
		27	5.50	8.48	**1.54**	OK
	W-80-L	8	4.50	6.22	**1.38**	OK
		12	4.50	5.53	**1.23**	OK
		18	4.50	5.42	**1.20**	OK
		20	4.50	6.56	**1.46**	OK
	W-80-M	10	57.0	86.81	**1.52**	OK
		11	57.0	86.01	**1.51**	OK
	W-80-H	3	320	424.83	**1.33**	OK
		5	320	435.63	**1.36**	OK
	W-110	1	5.10	5.71	**1.12**	OK
		2	5.10	5.29	**1.04**	OK
	Cs-137	15	4.40	5.52	**1.25**	OK
		16	4.40	5.74	**1.30**	OK
	NIR	6				**Legend for Quality**
	NIR	7				L ……. low dose
	NIR	9				M …… medium dose
	NIR	13				H ……. high dose
	NIR	14				NIR ….. not irradiated
	NIR	17				WIR …. wrongly irradiated
	NIR	19				
	NIR	22				
	NIR	23				
	NIR	24				
	NIR	28				
	NIR	29				
	NIR	30				
	NIR	31				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.70	0.70	0.74	0.66	7%	-
N-30	2	1.38	1.38	1.39	1.38	1%	**N-30: 60°/0°**
N-30/60°	2	1.47	1.47	1.54	1.40	7%	1.06
W-80-L	4	1.31	1.32	1.46	1.20	9%	**W-80: H/L**
W-80-M	2	1.52	1.52	1.52	1.51	1%	1.15
W-80-H	2	1.34	1.34	1.36	1.33	2%	
W-110	2	1.08	1.08	1.12	1.04	5%	-
Cs-137	2	1.28	1.28	1.30	1.25	3%	-
photon all	**16**	**1.37**	**1.34**	**1.54**	**1.04**	**11%**	**-**
All	18	1.34	1.27	1.54	0.66	19%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

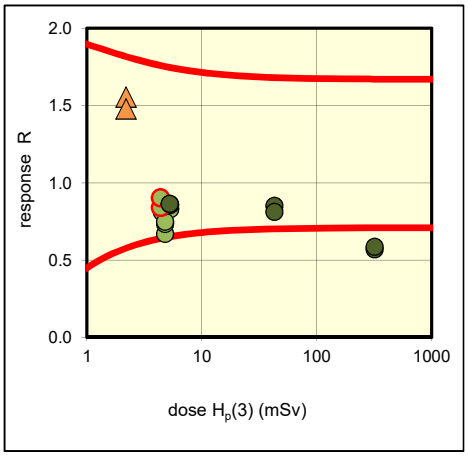
Reporting number 75 : Eye - photon dosemeter

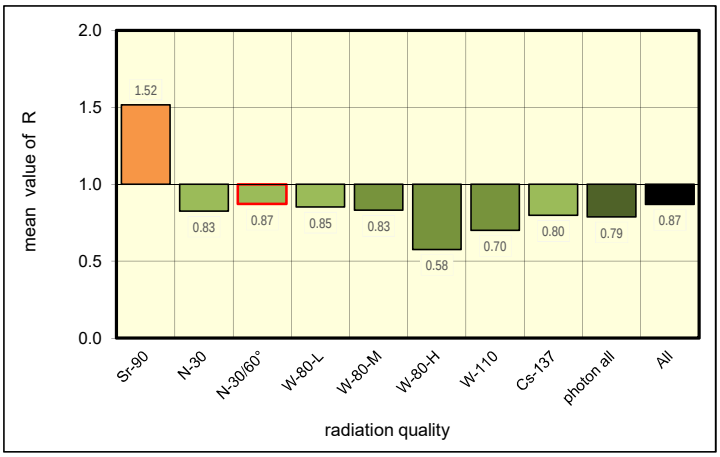
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	12	2.20	3.42	1.55	(OK)
		21	2.20	3.25	1.48	(OK)
photon	N-30	24	4.50	3.78	**0.84**	OK
		25	4.50	3.65	**0.81**	OK
	N-30/60°	3	4.40	3.70	**0.84**	OK
		5	4.40	3.97	**0.90**	OK
	W-80-L	1	5.30	4.57	**0.86**	OK
		2	5.30	4.39	**0.83**	OK
		20	5.30	4.57	**0.86**	OK
		22	5.30	4.54	**0.86**	OK
	W-80-M	17	43.0	36.59	**0.85**	OK
		19	43.0	34.90	**0.81**	OK
	W-80-H	28	321	182.25	**0.57**	outlier
		29	321	187.82	**0.59**	outlier
	W-110	10	4.80	3.21	**0.67**	OK
		11	4.80	3.52	**0.73**	OK
	Cs-137	31	4.80	3.59	**0.75**	OK
		32	4.80	4.07	**0.85**	OK
	NIR	4				**Legend for Quality**
	NIR	6				L ……. low dose
	NIR	7				M …… medium dose
	NIR	8				H ……. high dose
	NIR	9				NIR ….. not irradiated
	NIR	13				WIR …. wrongly irradiated
	NIR	14				
	NIR	15				
	NIR	16				
	NIR	18				
	NIR	23				
	NIR	26				
	NIR	27				
	NIR	30				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	1.52	1.52	1.55	1.48	4%	-
N-30	2	0.83	0.83	0.84	0.81	2%	**N-30: 60°/0°**
N-30/60°	2	0.87	0.87	0.90	0.84	5%	1.06
W-80-L	4	0.86	0.85	0.86	0.83	2%	**W-80: H/L**
W-80-M	2	0.83	0.83	0.85	0.81	3%	0.98
W-80-H	2	0.58	0.58	0.59	0.57	2%	
W-110	2	0.70	0.70	0.73	0.67	7%	-
Cs-137	2	0.80	0.80	0.85	0.75	9%	-
photon all	**16**	**0.83**	**0.79**	**0.90**	**0.57**	**13%**	**-**
All	18	0.84	0.87	1.55	0.57	29%	-

outliers: 2 of 16 fraction of outliers: 13%





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

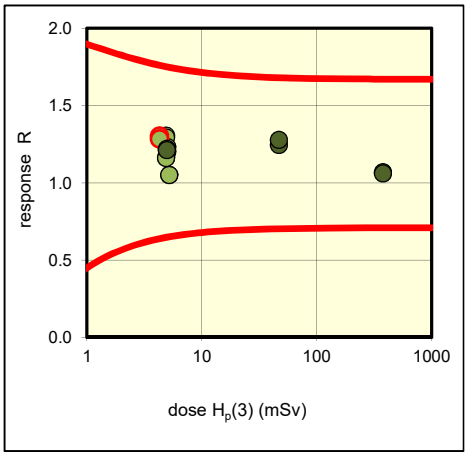
Reporting number 76 : Eye - photon dosemeter

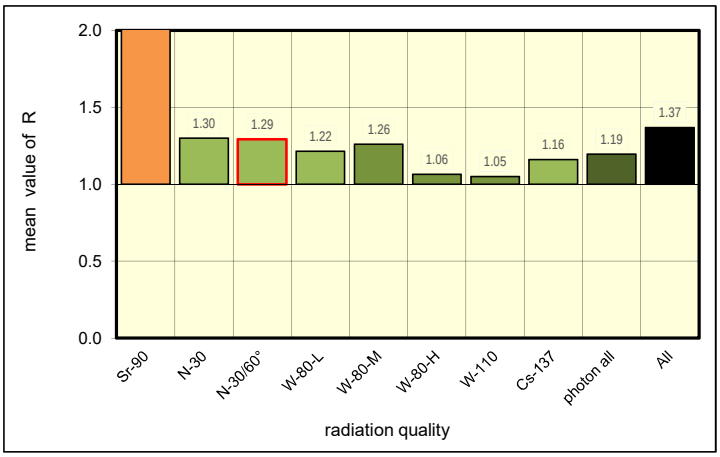
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	4	2.20	6.28	2.85	(outlier)
		21	2.20	5.85	2.66	(outlier)
photon	N-30	19	4.90	6.40	**1.31**	OK
		20	4.90	6.34	**1.29**	OK
	N-30/60°	1	4.30	5.60	**1.30**	OK
		2	4.30	5.52	**1.28**	OK
	W-80-L	22	5.00	6.09	**1.22**	OK
		25	5.00	6.16	**1.23**	OK
		26	5.00	6.05	**1.21**	OK
		28	5.00	6.01	**1.20**	OK
	W-80-M	5	47.0	58.46	**1.24**	OK
		6	47.0	60.05	**1.28**	OK
	W-80-H	16	378	403.82	**1.07**	OK
		27	378	400.47	**1.06**	OK
	W-110	30	5.20	5.46	**1.05**	OK
		32	5.20	5.46	**1.05**	OK
	Cs-137	9	4.90	5.69	**1.16**	OK
		10	4.90	5.69	**1.16**	OK
	NIR	3				**Legend for Quality**
	NIR	7				L ……. low dose
	NIR	8				M …… medium dose
	NIR	11				H ……. high dose
	NIR	12				NIR ….. not irradiated
	NIR	13				WIR …. wrongly irradiated
	NIR	14				
	NIR	15				
	NIR	17				
	NIR	18				
	NIR	23				
	NIR	24				
	NIR	29				
	NIR	31				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	2.76	2.76	2.85	2.66	5%	-
N-30	2	1.30	1.30	1.31	1.29	1%	**N-30: 60°/0°**
N-30/60°	2	1.29	1.29	1.30	1.28	1%	0.99
W-80-L	4	1.21	1.22	1.23	1.20	1%	**W-80: H/L**
W-80-M	2	1.26	1.26	1.28	1.24	2%	1.04
W-80-H	2	1.06	1.06	1.07	1.06	1%	
W-110	2	1.05	1.05	1.05	1.05	0%	-
Cs-137	2	1.16	1.16	1.16	1.16	0%	-
photon all	**16**	**1.21**	**1.19**	**1.31**	**1.05**	**8%**	**-**
All	18	1.22	1.37	2.85	1.05	38%	-

outliers: 0 of 16 fraction of outliers: 0%





Results: $IC2019_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

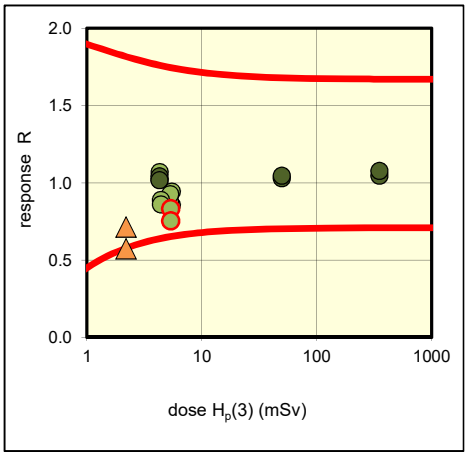
Reporting number 77 : Eye - photon dosemeter

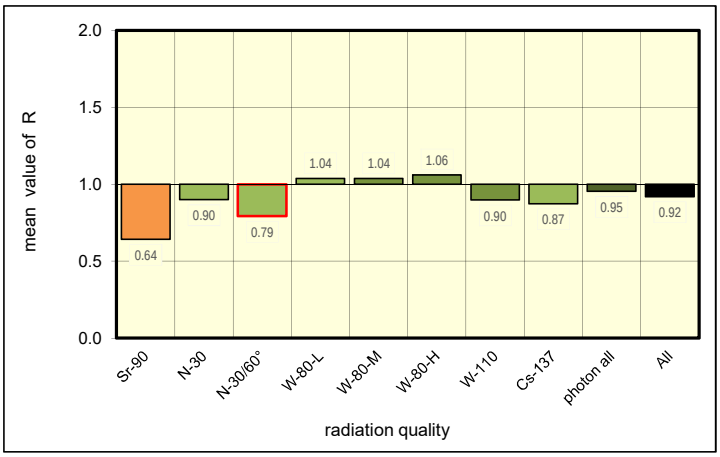
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	2	2.20	1.26	0.57	(outlier)
		17	2.20	1.57	0.71	(OK)
photon	N-30	11	5.50	4.71	**0.86**	OK
		12	5.50	5.19	**0.94**	OK
	N-30/60°	1	5.40	4.49	**0.83**	OK
		31	5.40	4.07	**0.75**	OK
	W-80-L	7	4.30	4.48	**1.04**	OK
		10	4.30	4.60	**1.07**	OK
		14	4.30	4.37	**1.02**	OK
		15	4.30	4.38	**1.02**	OK
	W-80-M	25	50.0	51.42	**1.03**	OK
		26	50.0	52.25	**1.05**	OK
	W-80-H	18	353	369.10	**1.05**	OK
		19	353	380.20	**1.08**	OK
	W-110	5	5.30	4.62	**0.87**	OK
		6	5.30	4.91	**0.93**	OK
	Cs-137	8	4.40	3.91	**0.89**	OK
		9	4.40	3.78	**0.86**	OK
	NIR	3				**Legend for Quality**
	NIR	4				L ……. low dose
	NIR	13				M …… medium dose
	NIR	16				H ……. high dose
	NIR	20				NIR ….. not irradiated
	NIR	21				WIR …. wrongly irradiated
	NIR	22				
	NIR	23				
	NIR	24				
	NIR	27				
	NIR	28				
	NIR	29				
	NIR	30				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.64	0.64	0.71	0.57	15%	-
N-30	2	0.90	0.90	0.94	0.86	7%	**N-30: 60°/0°**
N-30/60°	2	0.79	0.79	0.83	0.75	7%	0.88
W-80-L	4	1.03	1.04	1.07	1.02	2%	**W-80: H/L**
W-80-M	2	1.04	1.04	1.05	1.03	1%	1.00
W-80-H	2	1.06	1.06	1.08	1.05	2%	
W-110	2	0.90	0.90	0.93	0.87	4%	-
Cs-137	2	0.87	0.87	0.89	0.86	2%	-
photon all	**16**	**0.98**	**0.95**	**1.08**	**0.75**	**11%**	**-**
All	18	0.94	0.92	1.08	0.57	15%	-

outliers: 0 of 16 fraction of outliers: 0%





Results: $IC2019_{ext\ eye}$

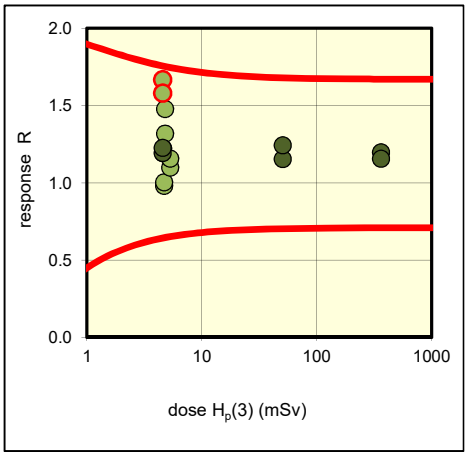
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

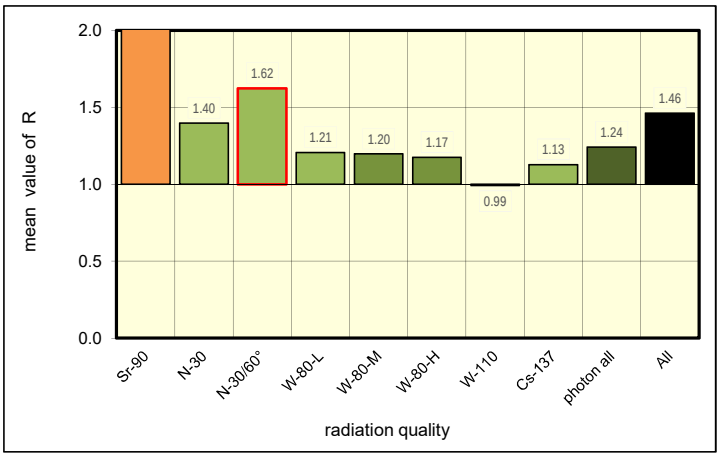
Reporting number 78 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	19	2.20	7.00	**3.18**	outlier
		24	2.20	7.21	**3.28**	outlier
photon	N-30	5	4.80	7.09	**1.48**	OK
		6	4.80	6.32	**1.32**	OK
	N-30/60°	14	4.60	7.67	**1.67**	OK
		15	4.60	7.27	**1.58**	OK
	W-80-L	12	4.60	5.48	**1.19**	OK
		13	4.60	5.61	**1.22**	OK
		17	4.60	5.64	**1.23**	OK
		18	4.60	5.48	**1.19**	OK
	W-80-M	2	51.0	58.75	**1.15**	OK
		3	51.0	63.34	**1.24**	OK
	W-80-H	9	364	435.24	**1.20**	OK
		10	364	420.04	**1.15**	OK
	W-110	30	4.70	4.61	**0.98**	OK
		31	4.70	4.71	**1.00**	OK
	Cs-137	26	5.30	5.82	**1.10**	OK
		27	5.30	6.13	**1.16**	OK
	NIR	1				**Legend for Quality**
	NIR	4				L ……. low dose
	NIR	7				M …… medium dose
	NIR	8				H ……. high dose
	NIR	11				NIR ….. not irradiated
	NIR	16				WIR …. wrongly irradiated
	NIR	20				
	NIR	21				
	NIR	22				
	NIR	23				
	NIR	25				
	NIR	28				
	NIR	29				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	3.23	3.23	3.28	3.18	2%	-
N-30	2	1.40	1.40	1.48	1.32	8%	N-30: 60°/0°
N-30/60°	2	1.62	1.62	1.67	1.58	4%	1.16
W-80-L	4	1.21	1.21	1.23	1.19	2%	W-80: H/L
W-80-M	2	1.20	1.20	1.24	1.15	5%	0.99
W-80-H	2	1.17	1.17	1.20	1.15	3%	
W-110	2	0.99	0.99	1.00	0.98	2%	-
Cs-137	2	1.13	1.13	1.16	1.10	4%	-
photon all	**16**	**1.19**	**1.24**	**1.67**	**0.98**	**15%**	**-**
All	**18**	**1.21**	**1.46**	**3.28**	**0.98**	**46%**	**-**

outliers: 2 of 18 **fraction of outliers: 11%**





Results: IC2019$_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

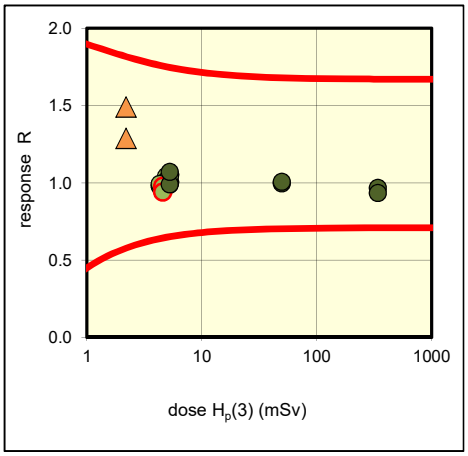
Reporting number 79 : Eye - photon dosemeter

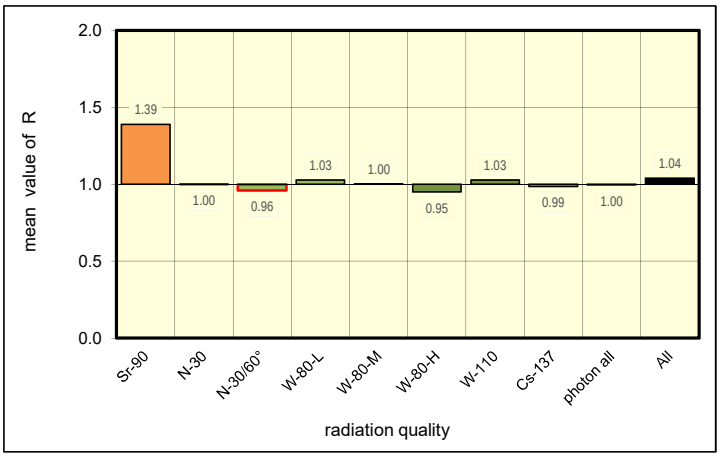
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	17	2.20	3.28	1.49	(OK)
		31	2.20	2.83	1.29	(OK)
photon	N-30	24	5.20	5.12	**0.99**	OK
		25	5.20	5.25	**1.01**	OK
	N-30/60°	1	4.60	4.50	**0.98**	OK
		5	4.60	4.32	**0.94**	OK
	W-80-L	14	5.30	5.24	**0.99**	OK
		15	5.30	5.32	**1.00**	OK
		20	5.30	5.67	**1.07**	OK
		21	5.30	5.56	**1.05**	OK
	W-80-M	18	50.0	49.74	**0.99**	OK
		19	50.0	50.32	**1.01**	OK
	W-80-H	6	342	330.20	**0.97**	OK
		8	342	319.50	**0.93**	OK
	W-110	26	4.90	5.10	**1.04**	OK
		27	4.90	4.97	**1.01**	OK
	Cs-137	9	4.30	4.21	**0.98**	OK
		10	4.30	4.27	**0.99**	OK
	NIR	2				**Legend for Quality**
	NIR	3				L ……. low dose
	NIR	4				M …… medium dose
	NIR	7				H ……. high dose
	NIR	11				NIR ….. not irradiated
	NIR	12				WIR …. wrongly irradiated
	NIR	13				
	NIR	16				
	NIR	22				
	NIR	23				
	NIR	28				
	NIR	29				
	NIR	30				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	1.39	1.39	1.49	1.29	10%	-
N-30	2	1.00	1.00	1.01	0.99	2%	**N-30: 60°/0°**
N-30/60°	2	0.96	0.96	0.98	0.94	3%	0.96
W-80-L	4	1.03	1.03	1.07	0.99	4%	**W-80: H/L**
W-80-M	2	1.00	1.00	1.01	0.99	1%	0.97
W-80-H	2	0.95	0.95	0.97	0.93	2%	
W-110	2	1.03	1.03	1.04	1.01	2%	-
Cs-137	2	0.99	0.99	0.99	0.98	1%	-
photon all	**16**	**0.99**	**1.00**	**1.07**	**0.93**	**4%**	**-**
All	18	1.00	1.04	1.49	0.93	13%	-

outliers: 0 of 16 fraction of outliers: 0%





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

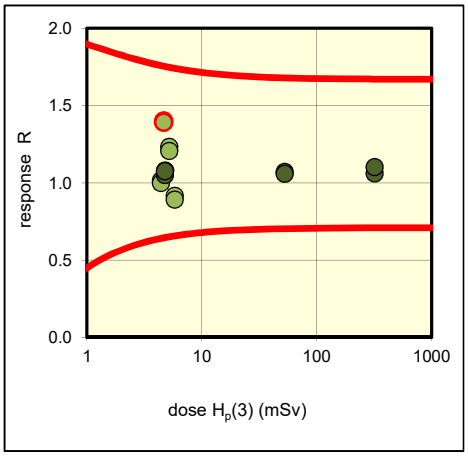
Reporting number 80 : Eye - photon dosemeter

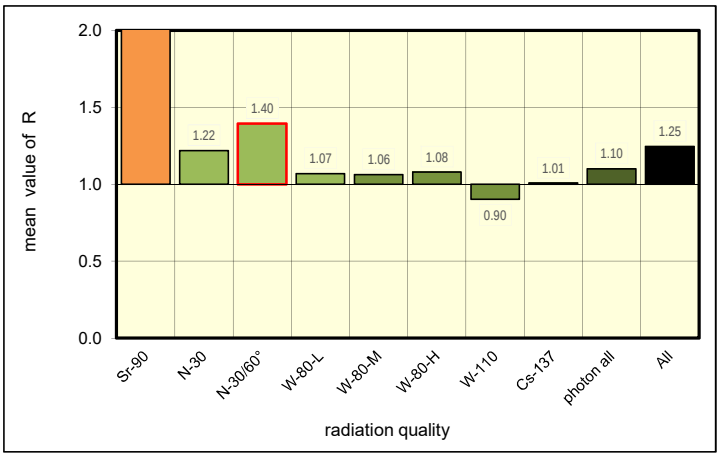
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	18	2.20	5.30	2.41	(outlier)
		27	2.20	5.32	2.42	(outlier)
photon	N-30	31	5.20	6.41	**1.23**	OK
		32	5.20	6.27	**1.20**	OK
	N-30/60°	11	4.70	6.58	**1.40**	OK
		13	4.70	6.53	**1.39**	OK
	W-80-L	22	4.80	5.04	**1.05**	OK
		23	4.80	5.16	**1.08**	OK
		24	4.80	5.16	**1.08**	OK
		25	4.80	5.18	**1.08**	OK
	W-80-M	29	53.0	56.66	**1.07**	OK
		30	53.0	56.02	**1.06**	OK
	W-80-H	20	320	338.80	**1.06**	OK
		21	320	352.20	**1.10**	OK
	W-110	1	5.80	5.31	**0.92**	OK
		2	5.80	5.16	**0.89**	OK
	Cs-137	9	4.40	4.47	**1.02**	OK
		10	4.40	4.40	**1.00**	OK
	NIR	3				**Legend for Quality**
	NIR	4				L ……. low dose
	NIR	5				M …… medium dose
	NIR	6				H ……. high dose
	NIR	7				NIR ….. not irradiated
	NIR	8				WIR …. wrongly irradiated
	NIR	12				
	NIR	14				
	NIR	15				
	NIR	16				
	NIR	17				
	NIR	19				
	NIR	26				
	NIR	28				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	2.41	2.41	2.42	2.41	0%	-
N-30	2	1.22	1.22	1.23	1.20	2%	**N-30: 60°/0°**
N-30/60°	2	1.40	1.40	1.40	1.39	1%	1.14
W-80-L	4	1.08	1.07	1.08	1.05	1%	**W-80: H/L**
W-80-M	2	1.06	1.06	1.07	1.06	1%	0.99
W-80-H	2	1.08	1.08	1.10	1.06	3%	
W-110	2	0.90	0.90	0.92	0.89	2%	-
Cs-137	2	1.01	1.01	1.02	1.00	1%	-
photon all	**16**	**1.07**	**1.10**	**1.40**	**0.89**	**13%**	**-**
All	18	1.08	1.25	2.42	0.89	36%	-

outliers: 0 of 16 fraction of outliers: 0%





Results: IC2019$_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

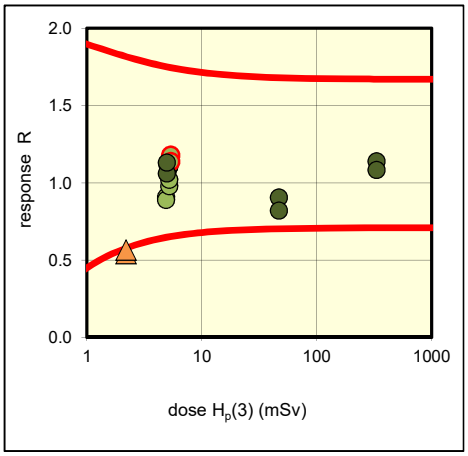
Reporting number 81 : Eye - photon dosemeter

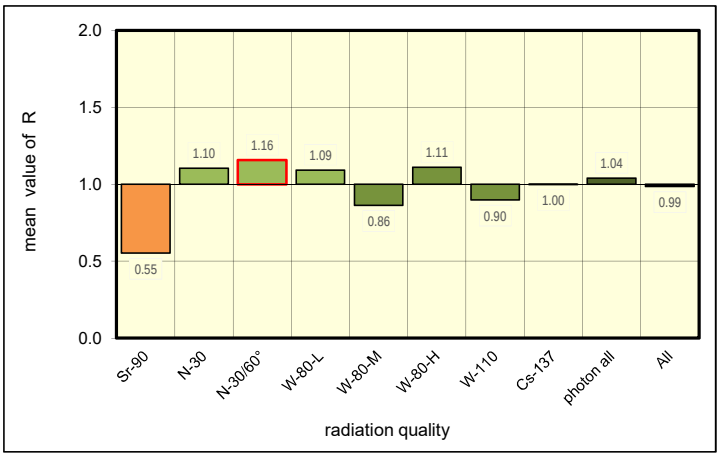
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	18	2.20	1.19	0.54	(outlier)
		21	2.20	1.24	0.56	(outlier)
photon	N-30	27	5.20	5.74	**1.10**	OK
		28	5.20	5.75	**1.11**	OK
	N-30/60°	16	5.40	6.36	**1.18**	OK
		17	5.40	6.14	**1.14**	OK
	W-80-L	6	5.00	5.30	**1.06**	OK
		9	5.00	5.59	**1.12**	OK
		25	5.00	5.65	**1.13**	OK
		26	5.00	5.30	**1.06**	OK
	W-80-M	3	47.0	42.53	**0.90**	OK
		4	47.0	38.55	**0.82**	OK
	W-80-H	31	333	378.80	**1.14**	OK
		32	333	360.22	**1.08**	OK
	W-110	7	4.90	4.45	**0.91**	OK
		8	4.90	4.35	**0.89**	OK
	Cs-137	10	5.20	5.09	**0.98**	OK
		11	5.20	5.30	**1.02**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	5				M …… medium dose
	NIR	12				H ……. high dose
	NIR	13				NIR ….. not irradiated
	NIR	14				WIR …. wrongly irradiated
	NIR	15				
	NIR	19				
	NIR	20				
	NIR	22				
	NIR	23				
	NIR	24				
	NIR	29				
	NIR	30				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.55	0.55	0.56	0.54	3%	-
N-30	2	1.10	1.10	1.11	1.10	0%	**N-30: 60°/0°**
N-30/60°	2	1.16	1.16	1.18	1.14	2%	1.05
W-80-L	4	1.09	1.09	1.13	1.06	3%	**W-80: H/L**
W-80-M	2	0.86	0.86	0.90	0.82	7%	0.79
W-80-H	2	1.11	1.11	1.14	1.08	4%	
W-110	2	0.90	0.90	0.91	0.89	2%	-
Cs-137	2	1.00	1.00	1.02	0.98	3%	-
photon all	**16**	**1.07**	**1.04**	**1.18**	**0.82**	**10%**	**-**
All	18	1.06	0.99	1.18	0.54	19%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

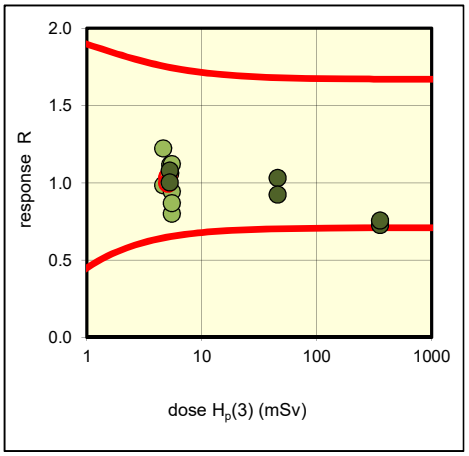
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

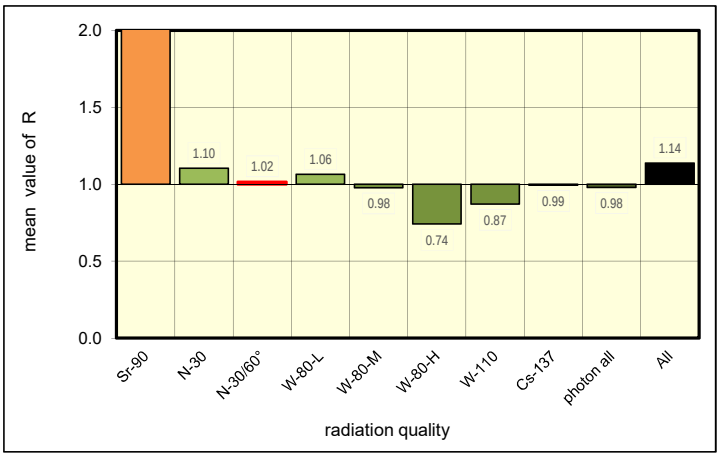
Reporting number 82 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	1	2.20	5.34	**2.43**	outlier
		20	2.20	5.27	**2.40**	outlier
photon	N-30	12	4.60	4.53	**0.98**	OK
		13	4.60	5.62	**1.22**	OK
	N-30/60°	14	5.10	5.28	**1.04**	OK
		15	5.10	5.09	**1.00**	OK
	W-80-L	3	5.30	5.71	**1.08**	OK
		4	5.30	5.92	**1.12**	OK
		9	5.30	5.31	**1.00**	OK
		10	5.30	5.62	**1.06**	OK
	W-80-M	24	46.0	47.45	**1.03**	OK
		25	46.0	42.46	**0.92**	OK
	W-80-H	22	358	260.17	**0.73**	OK
		23	358	270.58	**0.76**	OK
	W-110	7	5.50	4.40	**0.80**	OK
		8	5.50	5.18	**0.94**	OK
	Cs-137	31	5.50	4.77	**0.87**	OK
		32	5.50	6.16	**1.12**	OK
	NIR	2				**Legend for Quality**
	NIR	5				L ……. low dose
	NIR	6				M …… medium dose
	NIR	11				H ……. high dose
	NIR	16				NIR ….. not irradiated
	NIR	17				WIR …. wrongly irradiated
	NIR	18				
	NIR	19				
	NIR	21				
	NIR	26				
	NIR	27				
	NIR	28				
	NIR	29				
	NIR	30				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	2.41	2.41	2.43	2.40	1%	-
N-30	2	1.10	1.10	1.22	0.98	15%	N-30: 60°/0°
N-30/60°	2	1.02	1.02	1.04	1.00	3%	0.92
W-80-L	4	1.07	1.06	1.12	1.00	4%	W-80: H/L
W-80-M	2	0.98	0.98	1.03	0.92	8%	0.92
W-80-H	2	0.74	0.74	0.76	0.73	3%	
W-110	2	0.87	0.87	0.94	0.80	12%	-
Cs-137	2	0.99	0.99	1.12	0.87	18%	-
photon all	**16**	**1.00**	**0.98**	**1.22**	**0.73**	**14%**	**-**
All	**18**	**1.02**	**1.14**	**2.43**	**0.73**	**42%**	**-**

outliers: 2 of 18 fraction of outliers: 11%





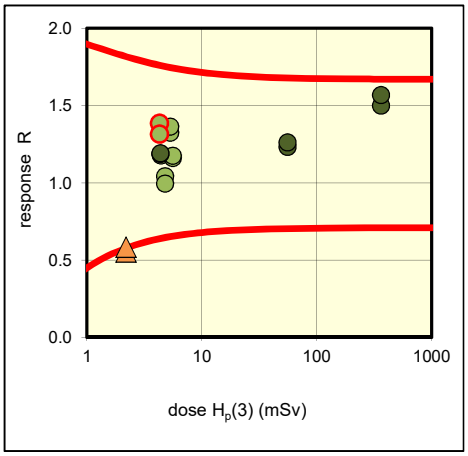
Results: IC2019$_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

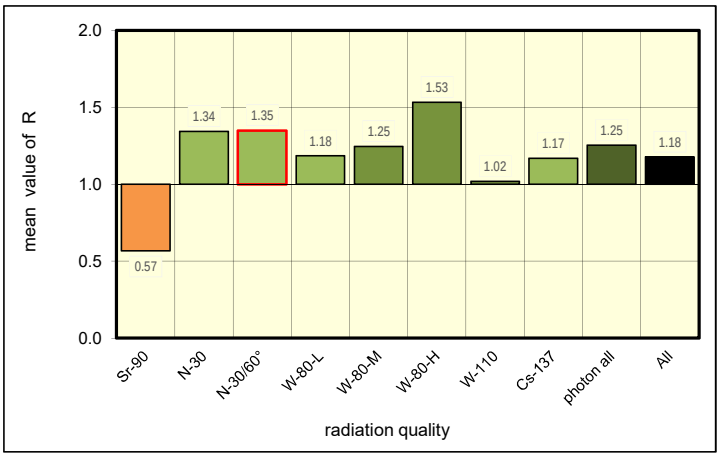
Reporting number 83 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	10	2.20	1.22	**0.55**	outlier
		14	2.20	1.28	**0.58**	OK
photon	N-30	13	5.30	7.02	**1.32**	OK
		15	5.30	7.22	**1.36**	OK
	N-30/60°	16	4.30	5.95	**1.38**	OK
		17	4.30	5.66	**1.32**	OK
	W-80-L	1	4.40	5.22	**1.19**	OK
		2	4.40	5.21	**1.18**	OK
		29	4.40	5.24	**1.19**	OK
		30	4.40	5.18	**1.18**	OK
	W-80-M	11	56.0	68.96	**1.23**	OK
		12	56.0	70.57	**1.26**	OK
	W-80-H	27	364	545.76	**1.50**	OK
		28	364	570.39	**1.57**	OK
	W-110	25	4.80	5.00	**1.04**	OK
		26	4.80	4.78	**0.99**	OK
	Cs-137	3	5.60	6.50	**1.16**	OK
		4	5.60	6.58	**1.17**	OK
	NIR	5				**Legend for Quality**
	NIR	6				L ……. low dose
	NIR	7				M …… medium dose
	NIR	8				H ……. high dose
	NIR	9				NIR ….. not irradiated
	NIR	18				WIR …. wrongly irradiated
	NIR	19				
	NIR	20				
	NIR	21				
	NIR	22				
	NIR	23				
	NIR	24				
	NIR	31				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.57	0.57	0.58	0.55	4%	-
N-30	2	1.34	1.34	1.36	1.32	2%	N-30: 60°/0°
N-30/60°	2	1.35	1.35	1.38	1.32	4%	1.00
W-80-L	4	1.19	1.18	1.19	1.18	0%	W-80: H/L
W-80-M	2	1.25	1.25	1.26	1.23	2%	1.05
W-80-H	2	1.53	1.53	1.57	1.50	3%	
W-110	2	1.02	1.02	1.04	0.99	3%	-
Cs-137	2	1.17	1.17	1.17	1.16	1%	-
photon all	**16**	**1.21**	**1.25**	**1.57**	**0.99**	**12%**	**-**
All	**18**	**1.19**	**1.18**	**1.57**	**0.55**	**22%**	**-**

outliers: 1 of 18 **fraction of outliers: 6%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

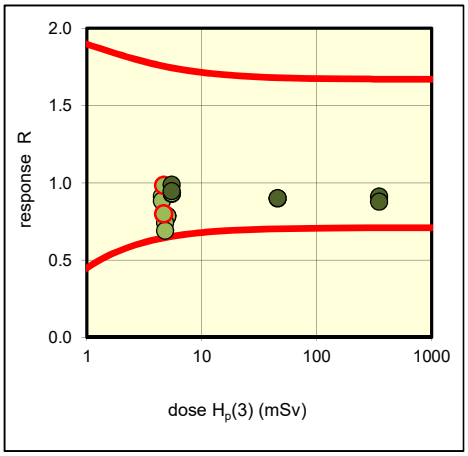
Reporting number 84 : Eye - photon dosemeter

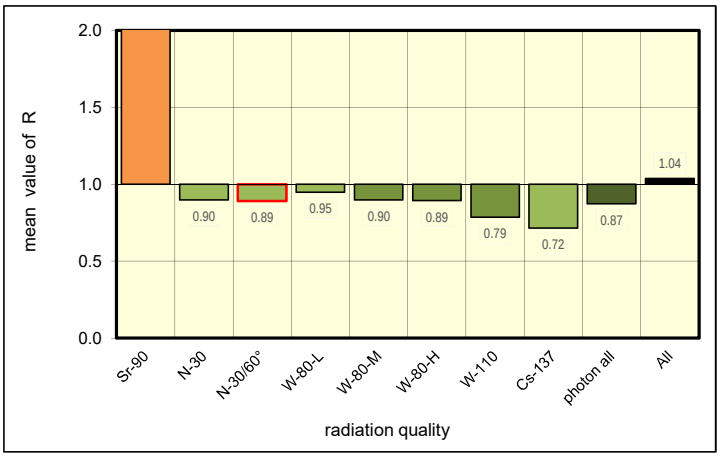
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	20	2.20	4.82	2.19	(outlier)
		24	2.20	5.56	2.53	(outlier)
photon	N-30	10	4.50	4.11	**0.91**	OK
		12	4.50	3.97	**0.88**	OK
	N-30/60°	29	4.70	3.75	**0.80**	OK
		30	4.70	4.62	**0.98**	OK
	W-80-L	17	5.50	5.43	**0.99**	OK
		18	5.50	5.10	**0.93**	OK
		21	5.50	5.20	**0.95**	OK
		23	5.50	5.13	**0.93**	OK
	W-80-M	8	46.0	41.29	**0.90**	OK
		9	46.0	41.42	**0.90**	OK
	W-80-H	14	350	318.64	**0.91**	OK
		15	350	306.86	**0.88**	OK
	W-110	13	5.00	3.93	**0.79**	OK
		16	5.00	3.92	**0.78**	OK
	Cs-137	26	4.80	3.56	**0.74**	OK
		27	4.80	3.31	**0.69**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	4				M …… medium dose
	NIR	5				H ……. high dose
	NIR	6				NIR ….. not irradiated
	NIR	7				WIR …. wrongly irradiated
	NIR	11				
	NIR	22				
	NIR	25				
	NIR	28				
	NIR	31				
	NIR	32				
	WIR	3				
	WIR	19				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	2.36	2.36	2.53	2.19	10%	-
N-30	2	0.90	0.90	0.91	0.88	2%	**N-30: 60°/0°**
N-30/60°	2	0.89	0.89	0.98	0.80	15%	0.99
W-80-L	4	0.94	0.95	0.99	0.93	3%	**W-80: H/L**
W-80-M	2	0.90	0.90	0.90	0.90	0%	0.95
W-80-H	2	0.89	0.89	0.91	0.88	3%	
W-110	2	0.79	0.79	0.79	0.78	0%	-
Cs-137	2	0.72	0.72	0.74	0.69	5%	-
photon all	**16**	**0.90**	**0.87**	**0.99**	**0.69**	**10%**	**-**
All	18	0.91	1.04	2.53	0.69	47%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

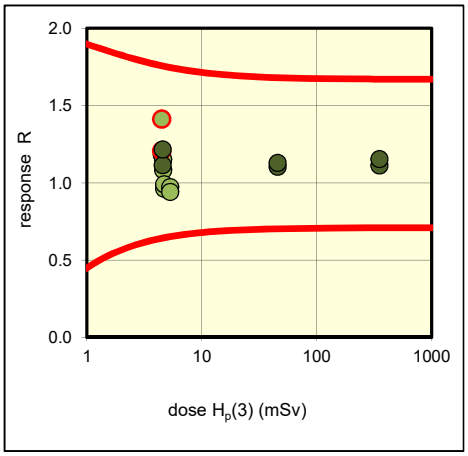
Reporting number 85 : Eye - photon dosemeter

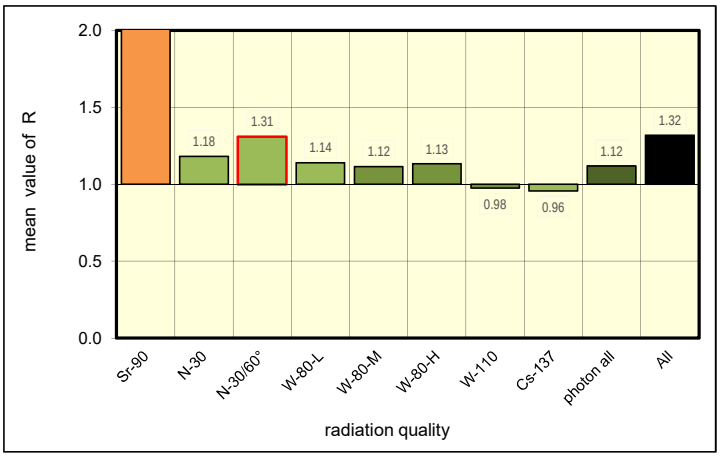
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	9	2.20	6.30	2.86	(outlier)
		27	2.20	6.52	2.96	(outlier)
photon	N-30	28	4.50	5.32	**1.18**	OK
		29	4.50	5.31	**1.18**	OK
	N-30/60°	6	4.50	5.43	**1.21**	OK
		8	4.50	6.35	**1.41**	OK
	W-80-L	11	4.60	5.12	**1.11**	OK
		12	4.60	5.29	**1.15**	OK
		22	4.60	5.59	**1.22**	OK
		23	4.60	4.97	**1.08**	OK
	W-80-M	19	46.0	50.70	**1.10**	OK
		20	46.0	51.90	**1.13**	OK
	W-80-H	25	353	392.70	**1.11**	OK
		26	353	406.70	**1.15**	OK
	W-110	7	4.70	4.52	**0.96**	OK
		31	4.70	4.65	**0.99**	OK
	Cs-137	17	5.30	5.15	**0.97**	OK
		18	5.30	4.99	**0.94**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	3				M …… medium dose
	NIR	4				H ……. high dose
	NIR	5				NIR ….. not irradiated
	NIR	10				WIR …. wrongly irradiated
	NIR	13				
	NIR	14				
	NIR	15				
	NIR	16				
	NIR	21				
	NIR	24				
	NIR	30				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	2.91	2.91	2.96	2.86	2%	-
N-30	2	1.18	1.18	1.18	1.18	0%	**N-30: 60°/0°**
N-30/60°	2	1.31	1.31	1.41	1.21	11%	1.11
W-80-L	4	1.13	1.14	1.22	1.08	5%	**W-80: H/L**
W-80-M	2	1.12	1.12	1.13	1.10	2%	0.98
W-80-H	2	1.13	1.13	1.15	1.11	2%	
W-110	2	0.98	0.98	0.99	0.96	2%	-
Cs-137	2	0.96	0.96	0.97	0.94	2%	-
photon all	**16**	**1.12**	**1.12**	**1.41**	**0.94**	**11%**	**-**
All	18	1.14	1.32	2.96	0.94	45%	-

outliers: 0 of 16 fraction of outliers: 0%





Results: IC2019$_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

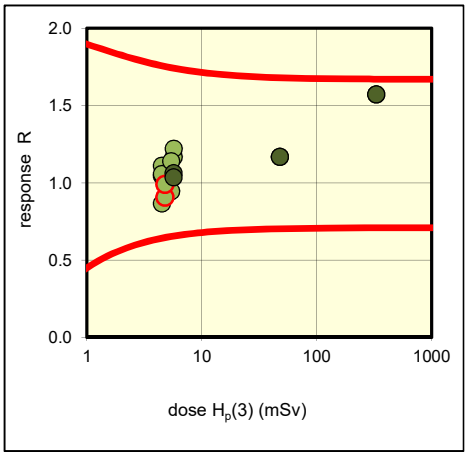
Reporting number 86 : Eye - photon dosemeter

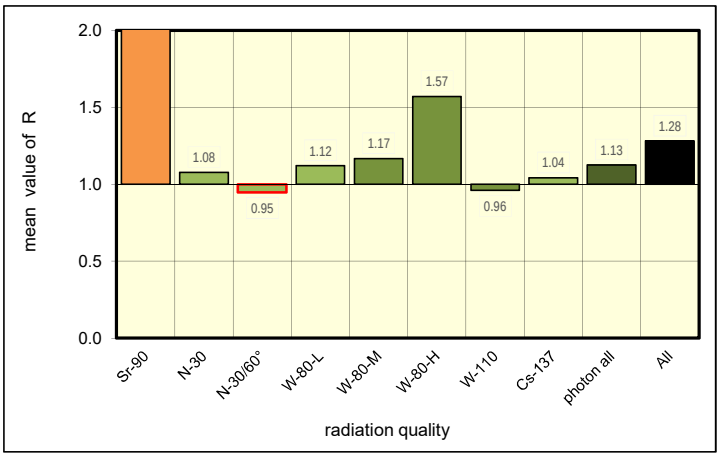
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	10	2.20	5.70	2.59	(outlier)
		13	2.20	5.40	2.45	(outlier)
photon	N-30	1	4.50	4.70	**1.04**	OK
		2	4.50	5.00	**1.11**	OK
	N-30/60°	11	4.80	4.35	**0.91**	OK
		19	4.80	4.75	**0.99**	OK
	W-80-L	21	5.70	6.05	**1.06**	OK
		24	5.70	6.65	**1.17**	OK
		31	5.70	5.90	**1.04**	OK
		32	5.70	6.95	**1.22**	OK
	W-80-M	25	48.0	56.00	**1.17**	OK
		26	48.0	56.00	**1.17**	OK
	W-80-H	6	331	520.00	**1.57**	OK
		8	331	520.00	**1.57**	OK
	W-110	27	4.50	3.90	**0.87**	OK
		28	4.50	4.75	**1.06**	OK
	Cs-137	4	5.40	6.15	**1.14**	OK
		5	5.40	5.10	**0.94**	OK
	NIR	3				**Legend for Quality**
	NIR	7				L ……. low dose
	NIR	9				M …… medium dose
	NIR	12				H ……. high dose
	NIR	14				NIR ….. not irradiated
	NIR	15				WIR …. wrongly irradiated
	NIR	16				
	NIR	17				
	NIR	18				
	NIR	20				
	NIR	22				
	NIR	23				
	NIR	29				
	NIR	30				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	2.52	2.52	2.59	2.45	4%	-
N-30	2	1.08	1.08	1.11	1.04	4%	**N-30: 60°/0°**
N-30/60°	2	0.95	0.95	0.99	0.91	6%	0.88
W-80-L	4	1.11	1.12	1.22	1.04	8%	**W-80: H/L**
W-80-M	2	1.17	1.17	1.17	1.17	0%	1.04
W-80-H	2	1.57	1.57	1.57	1.57	0%	
W-110	2	0.96	0.96	1.06	0.87	14%	-
Cs-137	2	1.04	1.04	1.14	0.94	13%	-
photon all	**16**	**1.09**	**1.13**	**1.57**	**0.87**	**18%**	**-**
All	18	1.13	1.28	2.59	0.87	38%	-

outliers: 0 of 16 fraction of outliers: 0%





Results: IC2019$_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

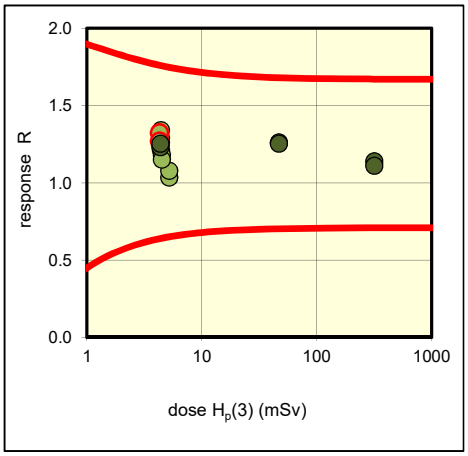
Reporting number 87 : Eye - photon dosemeter

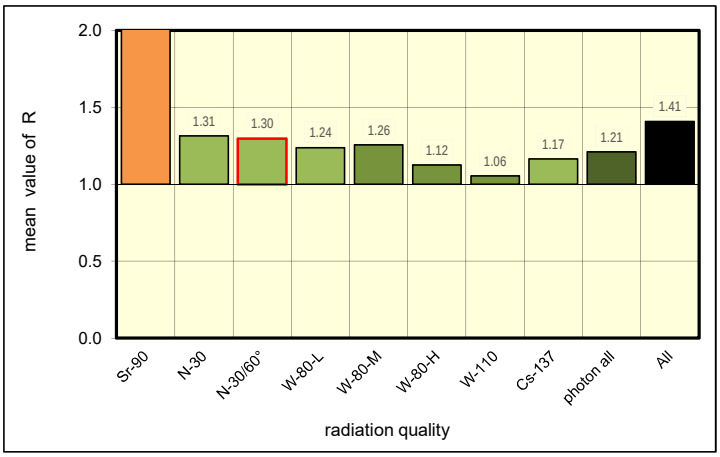
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	5	2.20	6.41	2.91	(outlier)
		20	2.20	6.73	3.06	(outlier)
photon	N-30	7	4.40	5.67	**1.29**	OK
		8	4.40	5.90	**1.34**	OK
	N-30/60°	21	4.30	5.69	**1.32**	OK
		23	4.30	5.46	**1.27**	OK
	W-80-L	2	4.40	5.41	**1.23**	OK
		3	4.40	5.53	**1.26**	OK
		18	4.40	5.51	**1.25**	OK
		19	4.40	5.33	**1.21**	OK
	W-80-M	16	47.0	59.22	**1.26**	OK
		17	47.0	58.82	**1.25**	OK
	W-80-H	11	319	363.35	**1.14**	OK
		13	319	353.81	**1.11**	OK
	W-110	4	5.20	5.38	**1.03**	OK
		6	5.20	5.60	**1.08**	OK
	Cs-137	14	4.50	5.31	**1.18**	OK
		15	4.50	5.18	**1.15**	OK
	NIR	1				**Legend for Quality**
	NIR	9				L ……. low dose
	NIR	10				M …… medium dose
	NIR	12				H ……. high dose
	NIR	22				NIR ….. not irradiated
	NIR	24				WIR …. wrongly irradiated
	NIR	25				
	NIR	26				
	NIR	27				
	NIR	28				
	NIR	29				
	NIR	30				
	NIR	31				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	2.99	2.99	3.06	2.91	3%	-
N-30	2	1.31	1.31	1.34	1.29	3%	**N-30: 60°/0°**
N-30/60°	2	1.30	1.30	1.32	1.27	3%	0.99
W-80-L	4	1.24	1.24	1.26	1.21	2%	**W-80: H/L**
W-80-M	2	1.26	1.26	1.26	1.25	0%	1.01
W-80-H	2	1.12	1.12	1.14	1.11	2%	
W-110	2	1.06	1.06	1.08	1.03	3%	-
Cs-137	2	1.17	1.17	1.18	1.15	2%	-
photon all	**16**	**1.24**	**1.21**	**1.34**	**1.03**	**7%**	**-**
All	18	1.25	1.41	3.06	1.03	41%	-

outliers: 0 of 16 fraction of outliers: 0%





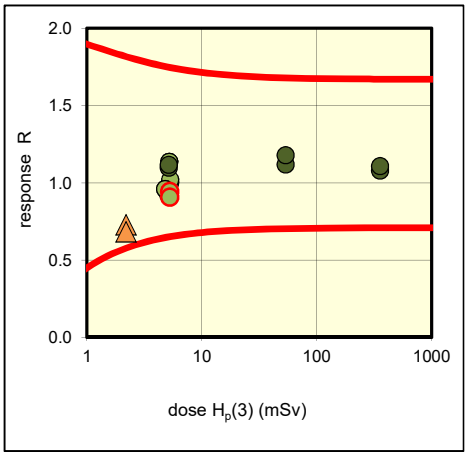
Results: $IC2019_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

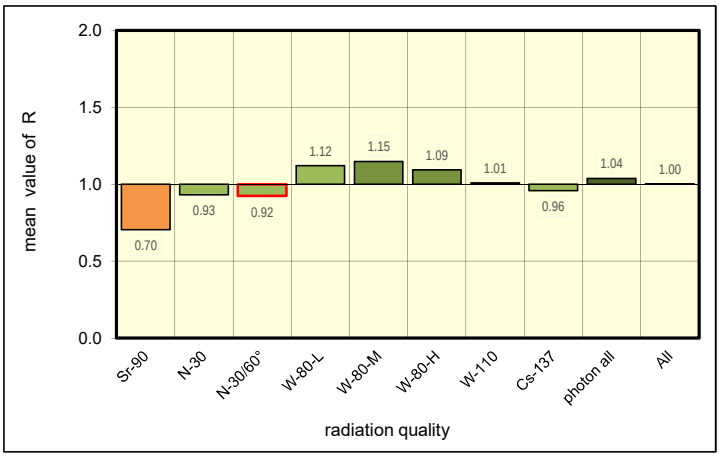
Reporting number 88 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	15	2.20	1.60	**0.73**	OK
		32	2.20	1.50	**0.68**	OK
photon	N-30	23	5.10	4.70	**0.92**	OK
		25	5.10	4.80	**0.94**	OK
	N-30/60°	2	5.30	5.00	**0.94**	OK
		6	5.30	4.80	**0.91**	OK
	W-80-L	4	5.20	5.70	**1.10**	OK
		5	5.20	5.90	**1.13**	OK
		17	5.20	5.80	**1.12**	OK
		19	5.20	5.90	**1.13**	OK
	W-80-M	13	54.0	60.40	**1.12**	OK
		14	54.0	63.60	**1.18**	OK
	W-80-H	11	358	386.30	**1.08**	OK
		12	358	396.50	**1.11**	OK
	W-110	18	5.30	5.30	**1.00**	OK
		20	5.30	5.40	**1.02**	OK
	Cs-137	3	4.80	4.60	**0.96**	OK
		8	4.80	4.60	**0.96**	OK
	NIR	1				**Legend for Quality**
	NIR	7				L ……. low dose
	NIR	9				M …… medium dose
	NIR	10				H ……. high dose
	NIR	16				NIR ….. not irradiated
	NIR	21				WIR …. wrongly irradiated
	NIR	22				
	NIR	24				
	NIR	26				
	NIR	27				
	NIR	28				
	NIR	29				
	NIR	30				
	NIR	31				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.70	0.70	0.73	0.68	5%	-
N-30	2	0.93	0.93	0.94	0.92	1%	**N-30: 60°/0°**
N-30/60°	2	0.92	0.92	0.94	0.91	3%	0.99
W-80-L	4	1.13	1.12	1.13	1.10	2%	**W-80: H/L**
W-80-M	2	1.15	1.15	1.18	1.12	4%	1.02
W-80-H	2	1.09	1.09	1.11	1.08	2%	
W-110	2	1.01	1.01	1.02	1.00	1%	-
Cs-137	2	0.96	0.96	0.96	0.96	0%	-
photon all	**16**	**1.05**	**1.04**	**1.18**	**0.91**	**9%**	**-**
All	**18**	**1.01**	**1.00**	**1.18**	**0.68**	**14%**	**-**

outliers: 0 of 18 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

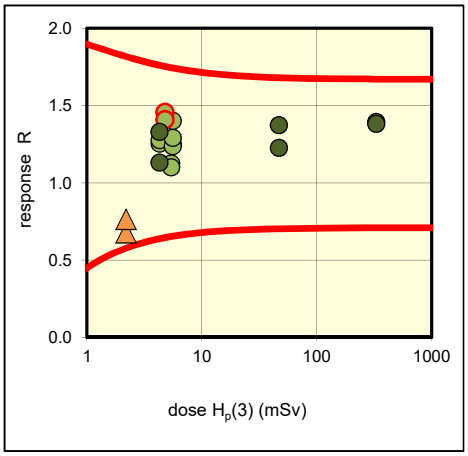
Reporting number 89 : Eye - photon dosemeter

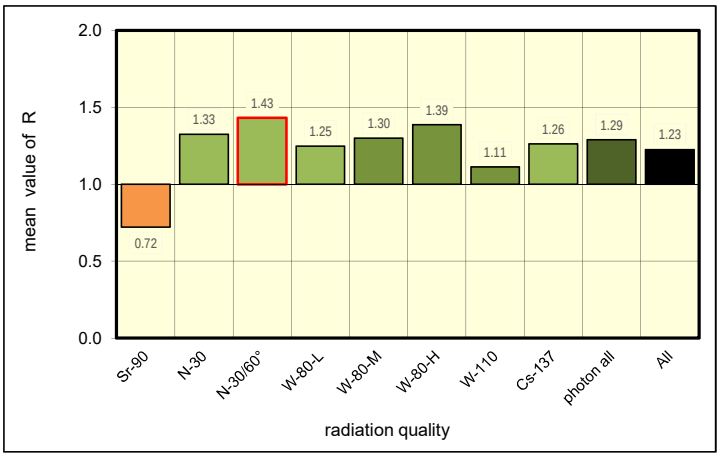
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	18	2.20	1.49	0.68	(OK)
		23	2.20	1.68	0.76	(OK)
photon	N-30	22	5.60	7.00	**1.25**	OK
		24	5.60	7.84	**1.40**	OK
	N-30/60°	14	4.80	6.99	**1.46**	OK
		16	4.80	6.76	**1.41**	OK
	W-80-L	11	4.30	5.71	**1.33**	OK
		12	4.30	5.39	**1.25**	OK
		26	4.30	4.86	**1.13**	OK
		27	4.30	5.49	**1.28**	OK
	W-80-M	15	47.0	57.63	**1.23**	OK
		17	47.0	64.49	**1.37**	OK
	W-80-H	3	332	462.37	**1.39**	OK
		5	332	458.48	**1.38**	OK
	W-110	25	5.40	6.07	**1.12**	OK
		28	5.40	5.94	**1.10**	OK
	Cs-137	6	5.60	6.92	**1.24**	OK
		7	5.60	7.23	**1.29**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	4				M …… medium dose
	NIR	8				H ……. high dose
	NIR	9				NIR ….. not irradiated
	NIR	10				WIR …. wrongly irradiated
	NIR	13				
	NIR	19				
	NIR	20				
	NIR	21				
	NIR	29				
	NIR	30				
	NIR	31				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.72	0.72	0.76	0.68	8%	-
N-30	2	1.33	1.33	1.40	1.25	8%	**N-30: 60°/0°**
N-30/60°	2	1.43	1.43	1.46	1.41	2%	1.08
W-80-L	4	1.27	1.25	1.33	1.13	7%	**W-80: H/L**
W-80-M	2	1.30	1.30	1.37	1.23	8%	1.04
W-80-H	2	1.39	1.39	1.39	1.38	1%	
W-110	2	1.11	1.11	1.12	1.10	2%	-
Cs-137	2	1.26	1.26	1.29	1.24	3%	-
photon all	**16**	**1.28**	**1.29**	**1.46**	**1.10**	**8%**	**-**
All	18	1.27	1.23	1.46	0.68	17%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

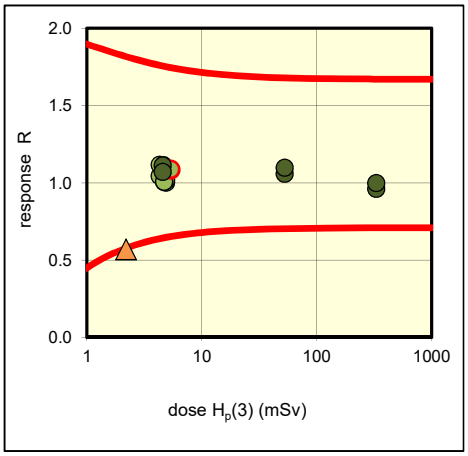
Reporting number 90 : Eye - photon dosemeter

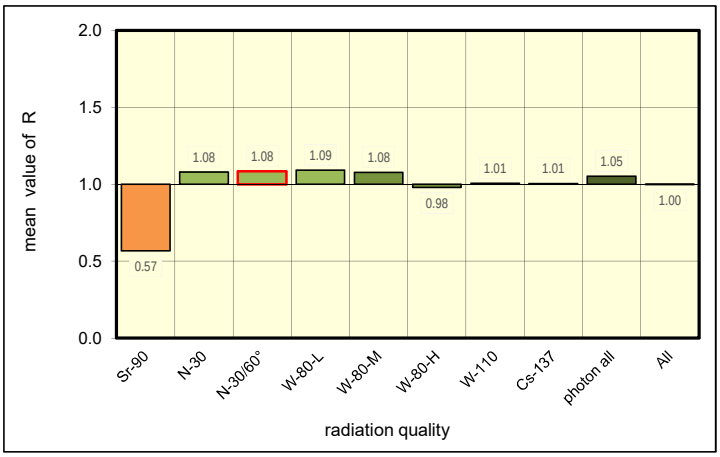
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	12	2.20	1.25	0.57	(outlier)
		31	2.20	1.25	0.57	(outlier)
photon	N-30	23	4.30	4.49	**1.04**	OK
		27	4.30	4.80	**1.12**	OK
	N-30/60°	20	5.40	5.84	**1.08**	OK
		21	5.40	5.87	**1.09**	OK
	W-80-L	9	4.60	5.11	**1.11**	OK
		10	4.60	5.13	**1.12**	OK
		18	4.60	4.92	**1.07**	OK
		19	4.60	4.93	**1.07**	OK
	W-80-M	2	53.0	56.05	**1.06**	OK
		5	53.0	58.17	**1.10**	OK
	W-80-H	14	332	319.00	**0.96**	OK
		16	332	331.20	**1.00**	OK
	W-110	29	4.90	4.90	**1.00**	OK
		30	4.90	4.97	**1.01**	OK
	Cs-137	7	4.70	4.72	**1.00**	OK
		8	4.70	4.73	**1.01**	OK
	NIR	1				**Legend for Quality**
	NIR	3				L ……. low dose
	NIR	4				M …… medium dose
	NIR	6				H ……. high dose
	NIR	11				NIR ….. not irradiated
	NIR	13				WIR …. wrongly irradiated
	NIR	15				
	NIR	17				
	NIR	22				
	NIR	24				
	NIR	25				
	NIR	26				
	NIR	28				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.57	0.57	0.57	0.57	0%	-
N-30	2	1.08	1.08	1.12	1.04	5%	**N-30: 60°/0°**
N-30/60°	2	1.08	1.08	1.09	1.08	0%	1.00
W-80-L	4	1.09	1.09	1.12	1.07	2%	**W-80: H/L**
W-80-M	2	1.08	1.08	1.10	1.06	3%	0.99
W-80-H	2	0.98	0.98	1.00	0.96	3%	
W-110	2	1.01	1.01	1.01	1.00	1%	-
Cs-137	2	1.01	1.01	1.01	1.00	0%	-
photon all	**16**	**1.06**	**1.05**	**1.12**	**0.96**	**5%**	**-**
All	18	1.05	1.00	1.12	0.57	16%	-

outliers: 0 of 16 fraction of outliers: 0%





Results: $IC2019_{ext\ eye}$

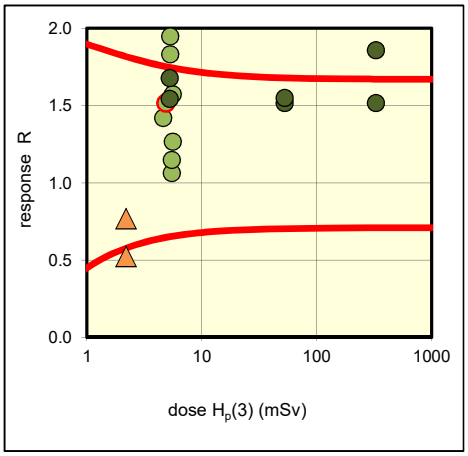
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

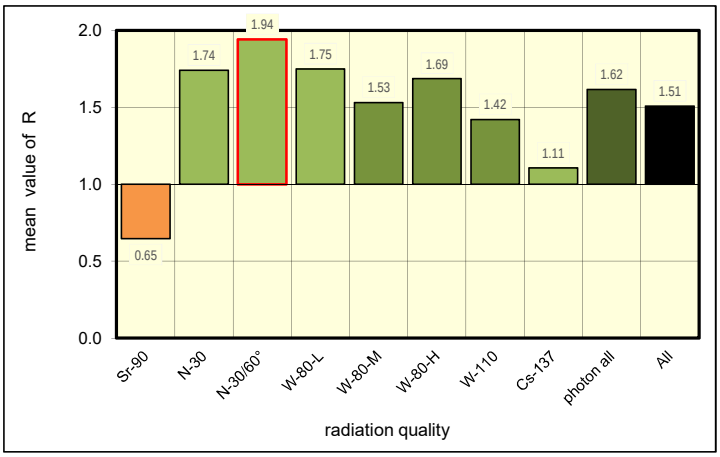
Reporting number 91 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	19	2.20	1.15	**0.52**	outlier
		27	2.20	1.69	**0.77**	OK
photon	N-30	29	4.60	6.53	**1.42**	OK
		31	4.60	9.49	**2.06**	outlier
	N-30/60°	10	4.90	11.61	**2.37**	outlier
		11	4.90	7.42	**1.51**	OK
	W-80-L	6	5.30	8.89	**1.68**	OK
		7	5.30	10.32	**1.95**	outlier
		14	5.30	8.17	**1.54**	OK
		15	5.30	9.70	**1.83**	outlier
	W-80-M	18	53.0	80.28	**1.51**	OK
		22	53.0	82.06	**1.55**	OK
	W-80-H	28	328	497.33	**1.52**	OK
		30	328	609.14	**1.86**	outlier
	W-110	16	5.60	7.09	**1.27**	OK
		17	5.60	8.81	**1.57**	OK
	Cs-137	4	5.50	5.85	**1.06**	OK
		5	5.50	6.31	**1.15**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	3				M …… medium dose
	NIR	8				H ……. high dose
	NIR	9				NIR ….. not irradiated
	NIR	12				WIR …. wrongly irradiated
	NIR	13				
	NIR	20				
	NIR	21				
	NIR	23				
	NIR	26				
	NIR	32				
	WIR	24				
	WIR	25				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.65	0.65	0.77	0.52	27%	-
N-30	2	1.74	1.74	2.06	1.42	26%	**N-30: 60°/0°**
N-30/60°	2	1.94	1.94	2.37	1.51	31%	1.12
W-80-L	4	1.75	1.75	1.95	1.54	10%	**W-80: H/L**
W-80-M	2	1.53	1.53	1.55	1.51	2%	0.88
W-80-H	2	1.69	1.69	1.86	1.52	14%	
W-110	2	1.42	1.42	1.57	1.27	15%	-
Cs-137	2	1.11	1.11	1.15	1.06	5%	-
photon all	**16**	**1.54**	**1.62**	**2.37**	**1.06**	**21%**	**-**
All	**18**	**1.53**	**1.51**	**2.37**	**0.52**	**30%**	**-**

outliers: 6 of 18 fraction of outliers: 33%





Results: $IC2019_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

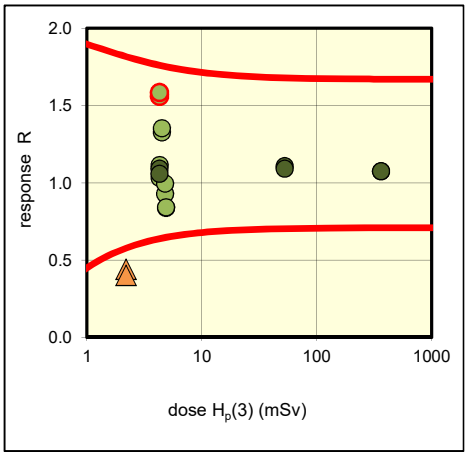
Reporting number 92 : Eye - photon dosemeter

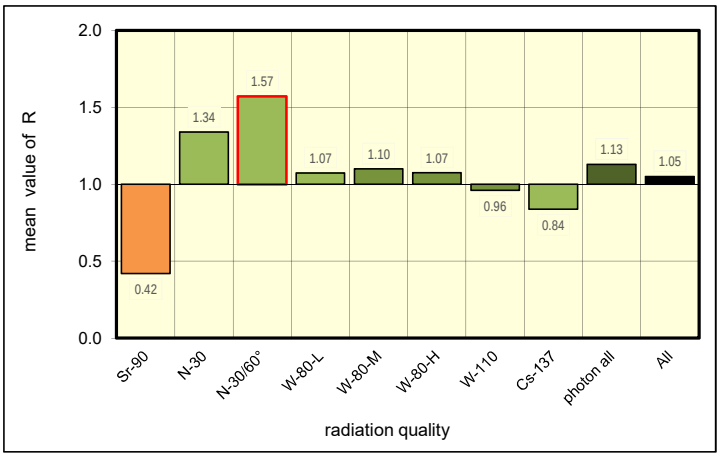
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	2	2.20	0.97	0.44	(outlier)
		27	2.20	0.88	0.40	(outlier)
photon	N-30	3	4.50	5.97	**1.33**	OK
		5	4.50	6.09	**1.35**	OK
	N-30/60°	6	4.30	6.70	**1.56**	OK
		7	4.30	6.81	**1.58**	OK
	W-80-L	9	4.30	4.69	**1.09**	OK
		12	4.30	4.44	**1.03**	OK
		20	4.30	4.55	**1.06**	OK
		22	4.30	4.79	**1.11**	OK
	W-80-M	24	53.0	58.74	**1.11**	OK
		25	53.0	57.84	**1.09**	OK
	W-80-H	30	364	391.29	**1.07**	OK
		32	364	390.67	**1.07**	OK
	W-110	28	4.80	4.46	**0.93**	OK
		29	4.80	4.77	**0.99**	OK
	Cs-137	21	4.90	4.10	**0.84**	OK
		23	4.90	4.12	**0.84**	OK
	NIR	1				**Legend for Quality**
	NIR	4				L ……. low dose
	NIR	8				M …… medium dose
	NIR	10				H ……. high dose
	NIR	11				NIR ….. not irradiated
	NIR	13				WIR …. wrongly irradiated
	NIR	14				
	NIR	15				
	NIR	16				
	NIR	17				
	NIR	18				
	NIR	19				
	NIR	26				
	NIR	31				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.42	0.42	0.44	0.40	7%	-
N-30	2	1.34	1.34	1.35	1.33	1%	**N-30: 60°/0°**
N-30/60°	2	1.57	1.57	1.58	1.56	1%	1.17
W-80-L	4	1.07	1.07	1.11	1.03	3%	**W-80: H/L**
W-80-M	2	1.10	1.10	1.11	1.09	1%	1.02
W-80-H	2	1.07	1.07	1.07	1.07	0%	
W-110	2	0.96	0.96	0.99	0.93	5%	-
Cs-137	2	0.84	0.84	0.84	0.84	0%	-
photon all	**16**	**1.08**	**1.13**	**1.58**	**0.84**	**20%**	**-**
All	18	1.07	1.05	1.58	0.40	29%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

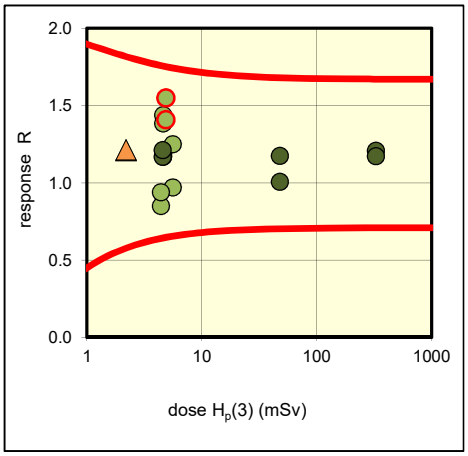
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

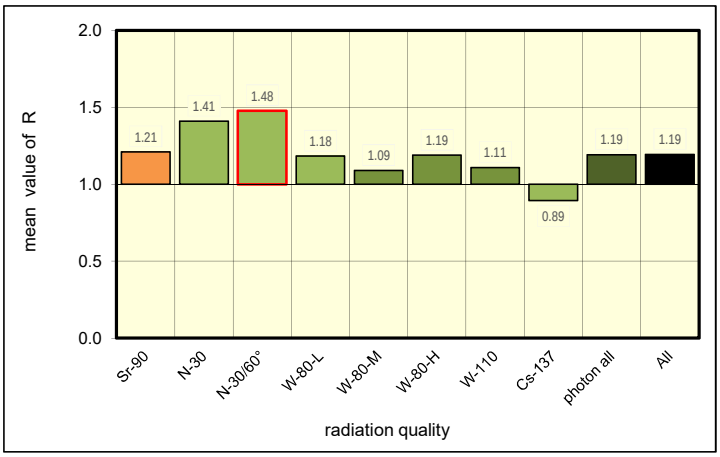
Reporting number 93 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	20	2.20	2.66	**1.21**	OK
		30	2.20	2.67	**1.21**	OK
photon	N-30	23	4.60	6.61	**1.44**	OK
		24	4.60	6.37	**1.38**	OK
	N-30/60°	1	4.90	7.59	**1.55**	OK
		3	4.90	6.90	**1.41**	OK
	W-80-L	2	4.60	5.37	**1.17**	OK
		4	4.60	5.46	**1.19**	OK
		26	4.60	5.57	**1.21**	OK
		27	4.60	5.37	**1.17**	OK
	W-80-M	5	48.0	56.29	**1.17**	OK
		8	48.0	48.30	**1.01**	OK
	W-80-H	15	328	395.94	**1.21**	OK
		17	328	384.42	**1.17**	OK
	W-110	6	5.60	6.99	**1.25**	OK
		7	5.60	5.43	**0.97**	OK
	Cs-137	18	4.40	3.74	**0.85**	OK
		19	4.40	4.13	**0.94**	OK
	NIR	9				**Legend for Quality**
	NIR	10				L ……. low dose
	NIR	11				M …… medium dose
	NIR	14				H ……. high dose
	NIR	16				NIR ….. not irradiated
	NIR	21				WIR …. wrongly irradiated
	NIR	22				
	NIR	25				
	NIR	28				
	NIR	29				
	NIR	31				
	NIR	32				
	WIR	12				
	WIR	13				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	1.21	1.21	1.21	1.21	0%	-
N-30	2	1.41	1.41	1.44	1.38	3%	N-30: 60°/0°
N-30/60°	2	1.48	1.48	1.55	1.41	7%	1.05
W-80-L	4	1.18	1.18	1.21	1.17	2%	W-80: H/L
W-80-M	2	1.09	1.09	1.17	1.01	11%	0.92
W-80-H	2	1.19	1.19	1.21	1.17	2%	
W-110	2	1.11	1.11	1.25	0.97	18%	-
Cs-137	2	0.89	0.89	0.94	0.85	7%	-
photon all	**16**	**1.18**	**1.19**	**1.55**	**0.85**	**16%**	**-**
All	**18**	**1.20**	**1.19**	**1.55**	**0.85**	**15%**	**-**

outliers: 0 of 18 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

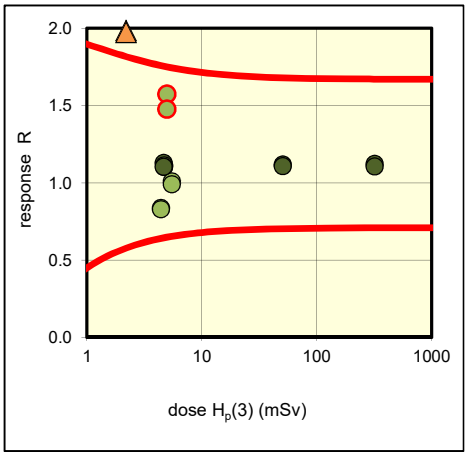
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

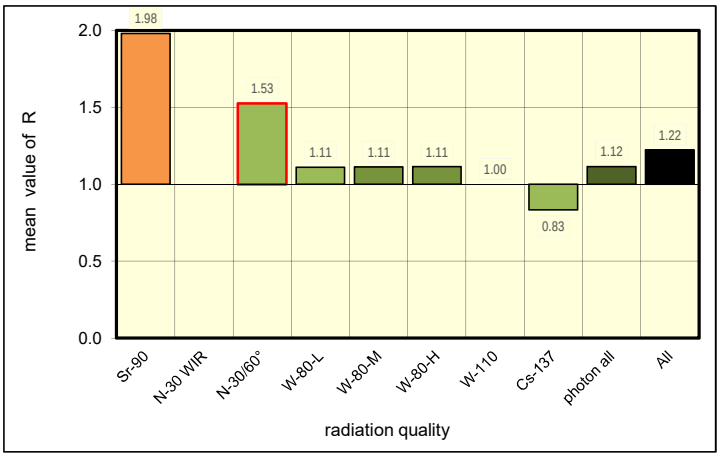
Reporting number 94 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	18	2.20	4.37	**1.99**	outlier
		30	2.20	4.34	**1.97**	outlier
photon	N-30 WIR					WIR
						WIR
	N-30/60°	31	5.00	7.87	**1.57**	OK
		32	5.00	7.38	**1.48**	OK
	W-80-L	10	4.70	5.30	**1.13**	OK
		14	4.70	5.23	**1.11**	OK
		25	4.70	5.18	**1.10**	OK
		26	4.70	5.18	**1.10**	OK
	W-80-M	6	51.0	57.00	**1.12**	OK
		7	51.0	56.50	**1.11**	OK
	W-80-H	1	320	358.90	**1.12**	OK
		2	320	353.90	**1.11**	OK
	W-110	23	5.50	5.55	**1.01**	OK
		24	5.50	5.45	**0.99**	OK
	Cs-137	12	4.40	3.68	**0.84**	OK
		13	4.40	3.65	**0.83**	OK
	NIR	3				**Legend for Quality**
	NIR	4				L ……. low dose
	NIR	5				M …… medium dose
	NIR	8				H ……. high dose
	NIR	9				NIR ….. not irradiated
	NIR	11				WIR …. wrongly irradiated
	NIR	15				
	NIR	16				
	NIR	17				
	NIR	19				
	NIR	20				
	NIR	21				
	NIR	22				
	NIR	28				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	1.98	1.98	1.99	1.97	0%	-
N-30 WIR	0						
N-30/60°	2	1.53	1.53	1.57	1.48	5%	
W-80-L	4	1.11	1.11	1.13	1.10	1%	W-80: H/L
W-80-M	2	1.11	1.11	1.12	1.11	1%	1.00
W-80-H	2	1.11	1.11	1.12	1.11	1%	
W-110	2	1.00	1.00	1.01	0.99	1%	-
Cs-137	2	0.83	0.83	0.84	0.83	1%	-
photon all	**14**	**1.11**	**1.12**	**1.57**	**0.83**	**18%**	**-**
All	**16**	**1.11**	**1.22**	**1.99**	**0.83**	**29%**	**-**

outliers: 2 of 16 fraction of outliers: 13%





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

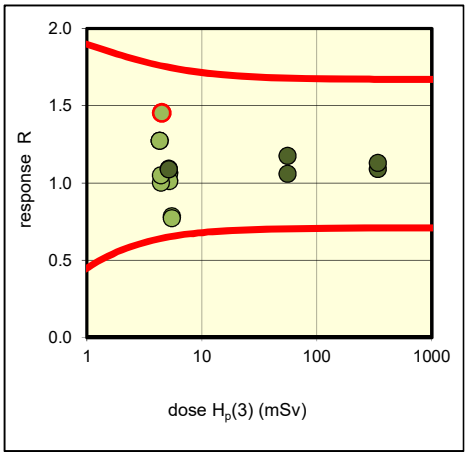
Reporting number 95 : Eye - photon dosemeter

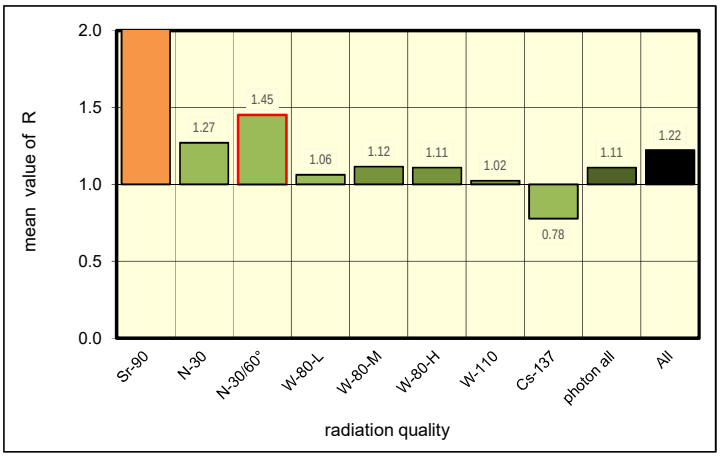
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	30	2.20	4.63	2.10	(outlier)
		32	2.20	4.77	2.17	(outlier)
photon	N-30	18	4.30	5.47	**1.27**	OK
		19	4.30	5.47	**1.27**	OK
	N-30/60°	12	4.50	6.54	**1.45**	OK
		14	4.50	6.53	**1.45**	OK
	W-80-L	16	5.20	5.68	**1.09**	OK
		17	5.20	5.53	**1.06**	OK
		23	5.20	5.65	**1.09**	OK
		25	5.20	5.26	**1.01**	OK
	W-80-M	21	56.0	65.73	**1.17**	OK
		24	56.0	59.22	**1.06**	OK
	W-80-H	4	342	372.65	**1.09**	OK
		5	342	385.92	**1.13**	OK
	W-110	8	4.40	4.40	**1.00**	OK
		10	4.40	4.61	**1.05**	OK
	Cs-137	28	5.50	4.30	**0.78**	OK
		29	5.50	4.24	**0.77**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	3				M …… medium dose
	NIR	6				H ……. high dose
	NIR	7				NIR ….. not irradiated
	NIR	9				WIR …. wrongly irradiated
	NIR	11				
	NIR	13				
	NIR	15				
	NIR	20				
	NIR	22				
	NIR	26				
	NIR	27				
	NIR	31				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	2.14	2.14	2.17	2.10	2%	-
N-30	2	1.27	1.27	1.27	1.27	0%	**N-30: 60°/0°**
N-30/60°	2	1.45	1.45	1.45	1.45	0%	1.14
W-80-L	4	1.07	1.06	1.09	1.01	3%	**W-80: H/L**
W-80-M	2	1.12	1.12	1.17	1.06	7%	1.05
W-80-H	2	1.11	1.11	1.13	1.09	2%	
W-110	2	1.02	1.02	1.05	1.00	3%	-
Cs-137	2	0.78	0.78	0.78	0.77	1%	-
photon all	**16**	**1.09**	**1.11**	**1.45**	**0.77**	**17%**	**-**
All	18	1.09	1.22	2.17	0.77	31%	-

outliers: 0 of 16 fraction of outliers: 0%





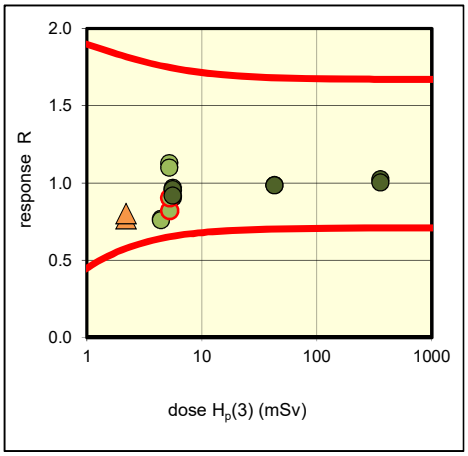
Results: $IC2019_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

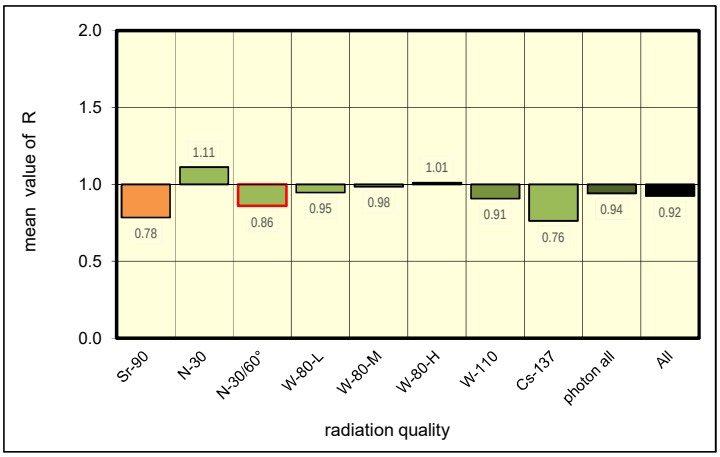
Reporting number 96 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	10	2.20	1.69	**0.77**	OK
		16	2.20	1.76	**0.80**	OK
photon	N-30	31	5.20	5.86	**1.13**	OK
		32	5.20	5.71	**1.10**	OK
	N-30/60°	4	5.30	4.34	**0.82**	OK
		5	5.30	4.78	**0.90**	OK
	W-80-L	7	5.60	5.36	**0.96**	OK
		9	5.60	5.42	**0.97**	OK
		21	5.60	5.13	**0.92**	OK
		22	5.60	5.30	**0.95**	OK
	W-80-M	12	43.0	42.35	**0.98**	OK
		13	43.0	42.29	**0.98**	OK
	W-80-H	17	359	367.32	**1.02**	OK
		18	359	359.30	**1.00**	OK
	W-110	14	5.60	5.06	**0.90**	OK
		15	5.60	5.10	**0.91**	OK
	Cs-137	1	4.40	3.37	**0.77**	OK
		2	4.40	3.34	**0.76**	OK
	NIR	3				**Legend for Quality**
	NIR	6				L ……. low dose
	NIR	8				M …… medium dose
	NIR	11				H ……. high dose
	NIR	19				NIR ….. not irradiated
	NIR	20				WIR …. wrongly irradiated
	NIR	23				
	NIR	24				
	NIR	25				
	NIR	26				
	NIR	27				
	NIR	28				
	NIR	29				
	NIR	30				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.78	0.78	0.80	0.77	3%	-
N-30	2	1.11	1.11	1.13	1.10	2%	N-30: 60°/0°
N-30/60°	2	0.86	0.86	0.90	0.82	7%	0.77
W-80-L	4	0.95	0.95	0.97	0.92	2%	W-80: H/L
W-80-M	2	0.98	0.98	0.98	0.98	0%	1.04
W-80-H	2	1.01	1.01	1.02	1.00	2%	
W-110	2	0.91	0.91	0.91	0.90	1%	-
Cs-137	2	0.76	0.76	0.77	0.76	1%	-
photon all	**16**	**0.95**	**0.94**	**1.13**	**0.76**	**11%**	**-**
All	**18**	**0.93**	**0.92**	**1.13**	**0.76**	**12%**	**-**

outliers: 0 of 18 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

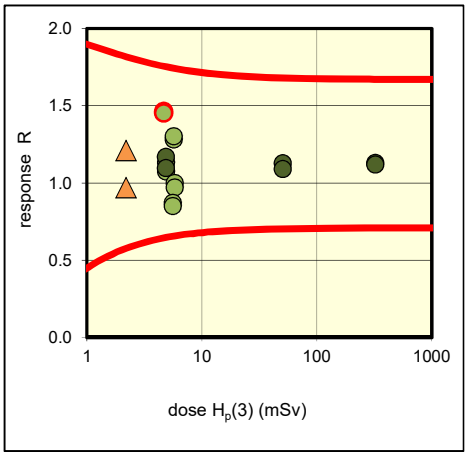
Reporting number 97 : Eye - photon dosemeter

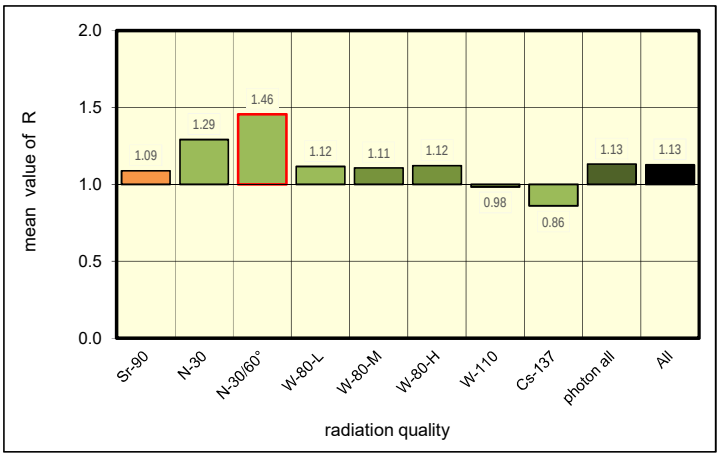
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	13	2.20	2.66	1.21	(OK)
		25	2.20	2.13	0.97	(OK)
photon	N-30	16	5.70	7.30	**1.28**	OK
		19	5.70	7.42	**1.30**	OK
	N-30/60°	15	4.70	6.87	**1.46**	OK
		18	4.70	6.82	**1.45**	OK
	W-80-L	10	4.90	5.72	**1.17**	OK
		11	4.90	5.54	**1.13**	OK
		26	4.90	5.36	**1.09**	OK
		28	4.90	5.26	**1.07**	OK
	W-80-M	3	51.0	57.47	**1.13**	OK
		6	51.0	55.53	**1.09**	OK
	W-80-H	30	324	365.18	**1.13**	OK
		31	324	361.89	**1.12**	OK
	W-110	7	5.80	5.79	**1.00**	OK
		8	5.80	5.62	**0.97**	OK
	Cs-137	17	5.60	4.87	**0.87**	OK
		20	5.60	4.76	**0.85**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	4				M …… medium dose
	NIR	5				H ……. high dose
	NIR	9				NIR ….. not irradiated
	NIR	12				WIR …. wrongly irradiated
	NIR	14				
	NIR	21				
	NIR	22				
	NIR	23				
	NIR	24				
	NIR	27				
	NIR	29				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	1.09	1.09	1.21	0.97	16%	-
N-30	2	1.29	1.29	1.30	1.28	1%	**N-30: 60°/0°**
N-30/60°	2	1.46	1.46	1.46	1.45	1%	1.13
W-80-L	4	1.11	1.12	1.17	1.07	4%	**W-80: H/L**
W-80-M	2	1.11	1.11	1.13	1.09	2%	0.99
W-80-H	2	1.12	1.12	1.13	1.12	1%	
W-110	2	0.98	0.98	1.00	0.97	2%	-
Cs-137	2	0.86	0.86	0.87	0.85	2%	-
photon all	**16**	**1.12**	**1.13**	**1.46**	**0.85**	**16%**	**-**
All	18	1.12	1.13	1.46	0.85	15%	-

outliers: 0 of 16 fraction of outliers: 0%





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

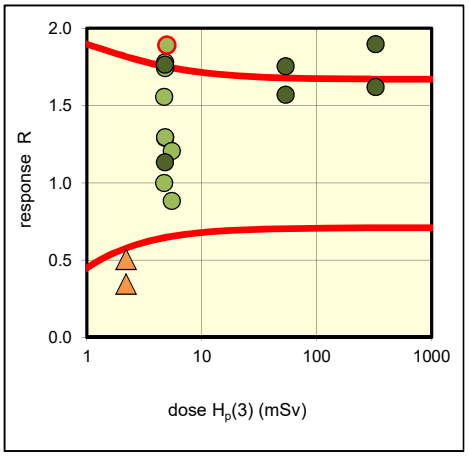
Reporting number 98 : Eye - photon/beta dosemeter

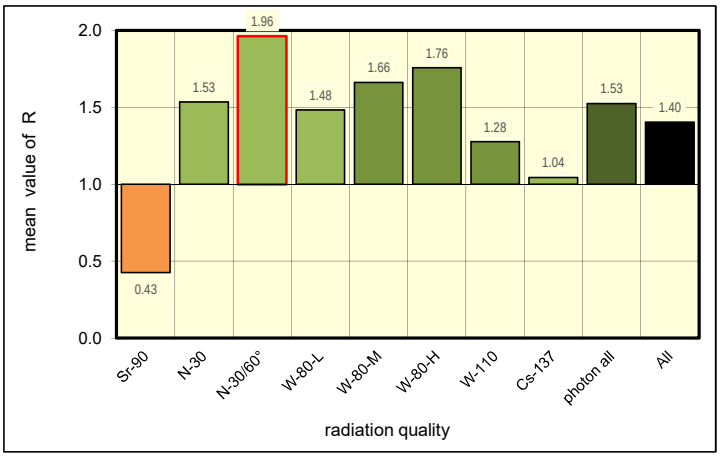
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	24	2.20	1.11	**0.50**	outlier
		26	2.20	0.76	**0.35**	outlier
photon	N-30	17	4.80	8.54	**1.78**	outlier
		18	4.80	6.19	**1.29**	OK
	N-30/60°	5	5.00	10.18	**2.04**	outlier
		9	5.00	9.45	**1.89**	outlier
	W-80-L	1	4.80	8.47	**1.76**	outlier
		2	4.80	8.36	**1.74**	OK
		3	4.80	5.43	**1.13**	OK
		4	4.80	6.21	**1.29**	OK
	W-80-M	8	54.0	84.77	**1.57**	OK
		10	54.0	94.72	**1.75**	outlier
	W-80-H	19	326	618.39	**1.90**	outlier
		20	326	527.50	**1.62**	OK
	W-110	14	4.70	4.69	**1.00**	OK
		15	4.70	7.31	**1.56**	OK
	Cs-137	11	5.50	6.63	**1.21**	OK
		13	5.50	4.85	**0.88**	OK
	NIR	6				
	NIR	7				
	NIR	12				
	NIR	16				
	NIR	21				
	NIR	22				
	NIR	23				
	NIR	25				
	NIR	27				
	NIR	28				
	NIR	29				
	NIR	30				
	NIR	31				
	NIR	32				

Legend for Quality
L ……. low dose
M …… medium dose
H …..… high dose
NIR ….. not irradiated
WIR …. wrongly irradiated

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.43	0.43	0.50	0.35	26%	-
N-30	2	1.53	1.53	1.78	1.29	23%	N-30: 60°/0°
N-30/60°	2	1.96	1.96	2.04	1.89	5%	1.28
W-80-L	4	1.52	1.48	1.76	1.13	22%	W-80: H/L
W-80-M	2	1.66	1.66	1.75	1.57	8%	1.12
W-80-H	2	1.76	1.76	1.90	1.62	11%	
W-110	2	1.28	1.28	1.56	1.00	31%	-
Cs-137	2	1.04	1.04	1.21	0.88	22%	-
photon all	**16**	**1.59**	**1.53**	**2.04**	**0.88**	**23%**	**-**
All	**18**	**1.56**	**1.40**	**2.04**	**0.35**	**35%**	**-**

outliers: 8 of 18 fraction of outliers: 44%





Results: $IC2019_{ext\ eye}$ 1 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

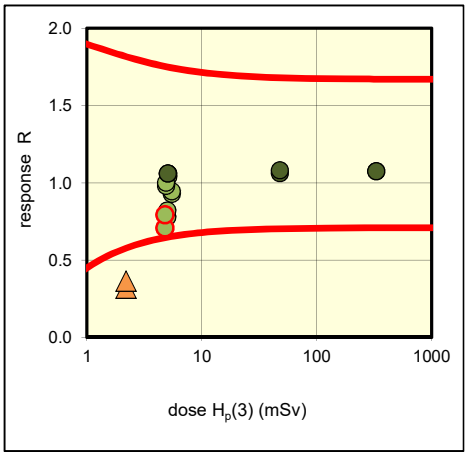
Reporting number 99 : Eye - photon dosemeter

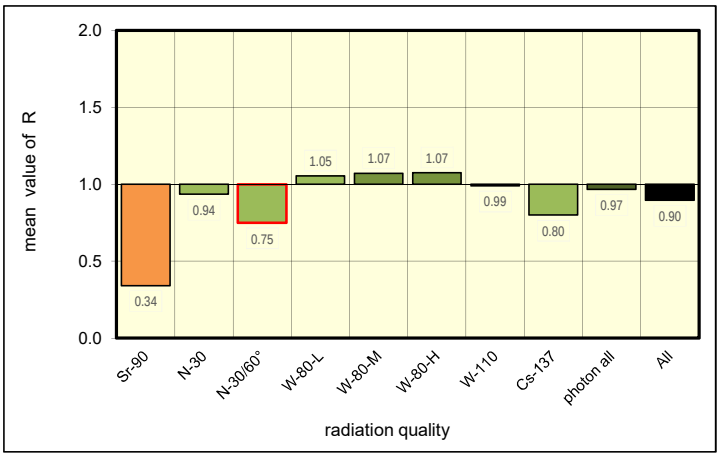
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	14	2.20	0.70	0.32	(outlier)
		29	2.20	0.80	0.36	(outlier)
photon	N-30	22	5.50	5.10	**0.93**	OK
		23	5.50	5.20	**0.95**	OK
	N-30/60°	20	4.80	3.40	**0.71**	OK
		21	4.80	3.80	**0.79**	OK
	W-80-L	4	5.10	5.40	**1.06**	OK
		7	5.10	5.40	**1.06**	OK
		16	5.10	5.40	**1.06**	OK
		18	5.10	5.30	**1.04**	OK
	W-80-M	1	48.0	51.00	**1.06**	OK
		2	48.0	51.90	**1.08**	OK
	W-80-H	17	331	355.50	**1.07**	OK
		19	331	355.80	**1.07**	OK
	W-110	8	4.90	4.80	**0.98**	OK
		9	4.90	4.90	**1.00**	OK
	Cs-137	10	5.00	3.90	**0.78**	OK
		11	5.00	4.10	**0.82**	OK
	NIR	3				**Legend for Quality**
	NIR	5				L ……. low dose
	NIR	6				M …… medium dose
	NIR	12				H ……. high dose
	NIR	13				NIR ….. not irradiated
	NIR	15				WIR …. wrongly irradiated
	NIR	24				
	NIR	25				
	NIR	26				
	NIR	27				
	NIR	28				
	NIR	30				
	NIR	31				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.34	0.34	0.36	0.32	9%	-
N-30	2	0.94	0.94	0.95	0.93	1%	**N-30: 60°/0°**
N-30/60°	2	0.75	0.75	0.79	0.71	8%	0.80
W-80-L	4	1.06	1.05	1.06	1.04	1%	**W-80: H/L**
W-80-M	2	1.07	1.07	1.08	1.06	1%	1.02
W-80-H	2	1.07	1.07	1.07	1.07	0%	
W-110	2	0.99	0.99	1.00	0.98	1%	-
Cs-137	2	0.80	0.80	0.82	0.78	4%	-
photon all	**16**	**1.02**	**0.97**	**1.08**	**0.71**	**13%**	**-**
All	18	0.99	0.90	1.08	0.32	26%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

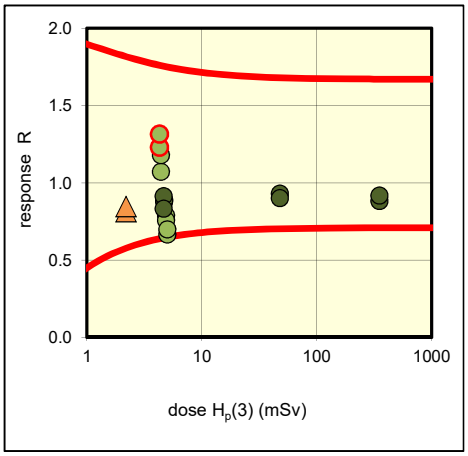
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

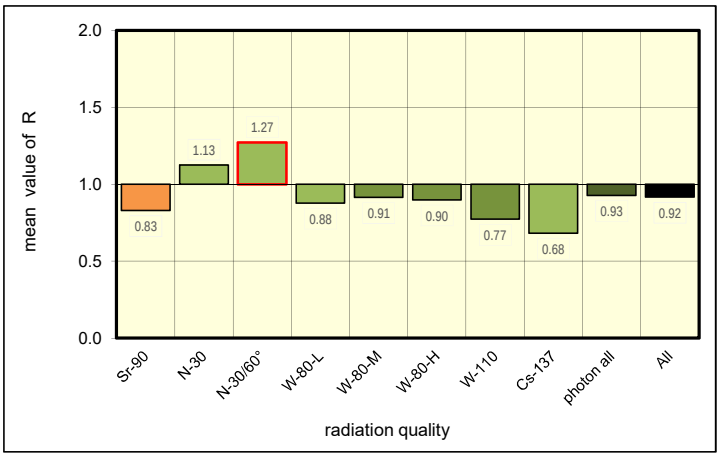
Reporting number 100 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	6	2.20	1.79	**0.81**	OK
		19	2.20	1.86	**0.85**	OK
photon	N-30	23	4.40	4.71	**1.07**	OK
		27	4.40	5.19	**1.18**	OK
	N-30/60°	11	4.30	5.29	**1.23**	OK
		13	4.30	5.65	**1.31**	OK
	W-80-L	3	4.70	4.29	**0.91**	OK
		4	4.70	4.13	**0.88**	OK
		25	4.70	3.91	**0.83**	OK
		26	4.70	4.18	**0.89**	OK
	W-80-M	28	48.0	44.60	**0.93**	OK
		29	48.0	43.18	**0.90**	OK
	W-80-H	8	354	311.98	**0.88**	OK
		9	354	324.62	**0.92**	OK
	W-110	5	4.90	3.86	**0.79**	OK
		7	4.90	3.71	**0.76**	OK
	Cs-137	1	5.00	3.33	**0.67**	OK
		2	5.00	3.49	**0.70**	OK
	NIR	10				**Legend for Quality**
	NIR	12				L ……. low dose
	NIR	14				M …… medium dose
	NIR	15				H ……. high dose
	NIR	16				NIR ….. not irradiated
	NIR	17				WIR …. wrongly irradiated
	NIR	18				
	NIR	20				
	NIR	21				
	NIR	22				
	NIR	24				
	NIR	30				
	NIR	31				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.83	0.83	0.85	0.81	3%	-
N-30	2	1.13	1.13	1.18	1.07	7%	N-30: 60°/0°
N-30/60°	2	1.27	1.27	1.31	1.23	5%	1.13
W-80-L	4	0.88	0.88	0.91	0.83	4%	W-80: H/L
W-80-M	2	0.91	0.91	0.93	0.90	2%	1.04
W-80-H	2	0.90	0.90	0.92	0.88	3%	
W-110	2	0.77	0.77	0.79	0.76	3%	-
Cs-137	2	0.68	0.68	0.70	0.67	3%	-
photon all	**16**	**0.89**	**0.93**	**1.31**	**0.67**	**20%**	**-**
All	**18**	**0.89**	**0.92**	**1.31**	**0.67**	**19%**	**-**

outliers: 0 of 18 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

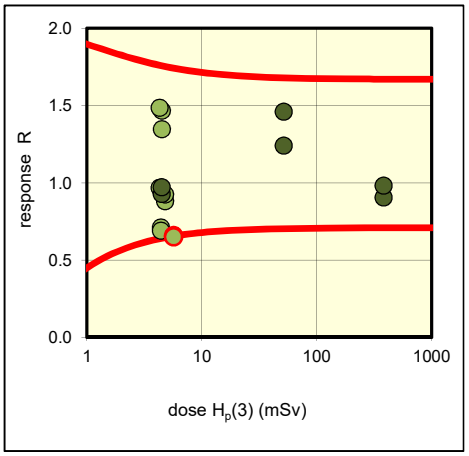
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

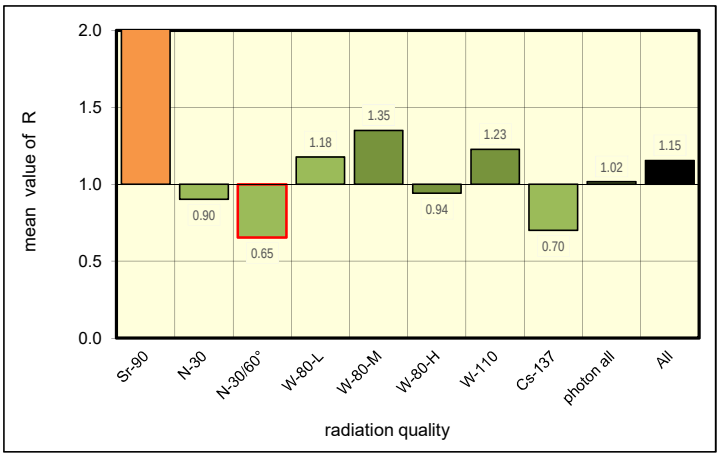
Reporting number 101 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Sr-90	1	2.20	5.02	**2.28**	outlier
		7	2.20	4.88	**2.22**	outlier
photon	N-30	2	4.80	4.23	**0.88**	OK
		4	4.80	4.44	**0.92**	OK
	N-30/60°	21	5.70	3.75	**0.66**	OK
		22	5.70	3.70	**0.65**	outlier
	W-80-L	14	4.50	4.17	**0.93**	OK
		16	4.50	6.60	**1.47**	OK
		24	4.50	4.37	**0.97**	OK
		28	4.50	6.06	**1.35**	OK
	W-80-M	10	52.0	75.85	**1.46**	OK
		13	52.0	64.50	**1.24**	OK
	W-80-H	8	384	347.35	**0.90**	OK
		9	384	376.35	**0.98**	OK
	W-110	17	4.30	4.16	**0.97**	OK
		18	4.30	6.39	**1.49**	OK
	Cs-137	25	4.40	3.13	**0.71**	OK
		26	4.40	3.04	**0.69**	OK
	NIR	3				**Legend for Quality**
	NIR	5				L ……. low dose
	NIR	6				M …… medium dose
	NIR	11				H ……. high dose
	NIR	12				NIR ….. not irradiated
	NIR	15				WIR …. wrongly irradiated
	NIR	19				
	NIR	20				
	NIR	23				
	NIR	27				
	NIR	29				
	NIR	30				
	NIR	31				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	2.25	2.25	2.28	2.22	2%	-
N-30	2	0.90	0.90	0.92	0.88	3%	N-30: 60°/0°
N-30/60°	2	0.65	0.65	0.66	0.65	1%	0.72
W-80-L	4	1.16	1.18	1.47	0.93	23%	W-80: H/L
W-80-M	2	1.35	1.35	1.46	1.24	11%	1.15
W-80-H	2	0.94	0.94	0.98	0.90	6%	
W-110	2	1.23	1.23	1.49	0.97	30%	-
Cs-137	2	0.70	0.70	0.71	0.69	2%	-
photon all	**16**	**0.95**	**1.02**	**1.49**	**0.65**	**29%**	**-**
All	**18**	**0.97**	**1.15**	**2.28**	**0.65**	**42%**	**-**

outliers: 3 of 18 fraction of outliers: 17%





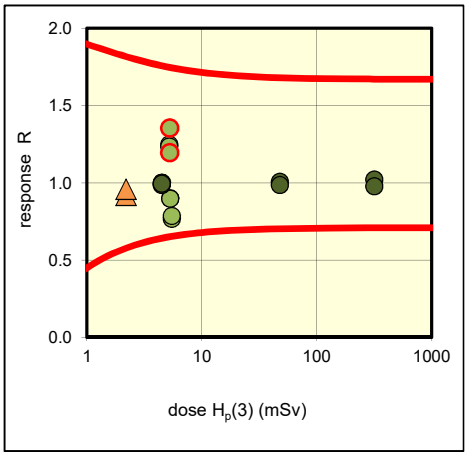
Results: $IC2019_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

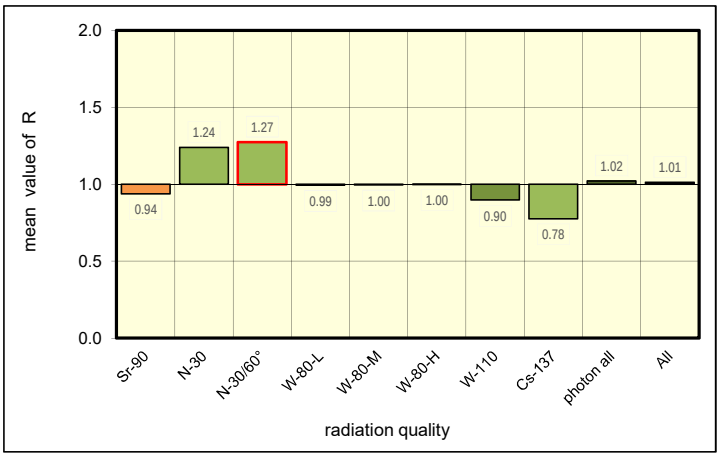
Reporting number 102 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	3	2.20	2.02	**0.92**	OK
		27	2.20	2.11	**0.96**	OK
photon	N-30	12	5.20	6.48	**1.25**	OK
		17	5.20	6.42	**1.23**	OK
	N-30/60°	1	5.30	6.33	**1.19**	OK
		2	5.30	7.18	**1.35**	OK
	W-80-L	14	4.50	4.43	**0.98**	OK
		18	4.50	4.50	**1.00**	OK
		29	4.50	4.47	**0.99**	OK
		31	4.50	4.49	**1.00**	OK
	W-80-M	19	48.0	48.30	**1.01**	OK
		20	48.0	47.33	**0.99**	OK
	W-80-H	22	319	325.67	**1.02**	OK
		24	319	311.51	**0.98**	OK
	W-110	11	5.30	4.76	**0.90**	OK
		13	5.30	4.75	**0.90**	OK
	Cs-137	15	5.50	4.22	**0.77**	OK
		16	5.50	4.32	**0.79**	OK
	NIR	4				**Legend for Quality**
	NIR	5				L ……. low dose
	NIR	6				M …… medium dose
	NIR	7				H ……. high dose
	NIR	8				NIR ….. not irradiated
	NIR	9				WIR …. wrongly irradiated
	NIR	10				
	NIR	21				
	NIR	23				
	NIR	25				
	NIR	26				
	NIR	28				
	NIR	30				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.94	0.94	0.96	0.92	3%	-
N-30	2	1.24	1.24	1.25	1.23	1%	N-30: 60°/0°
N-30/60°	2	1.27	1.27	1.35	1.19	9%	1.03
W-80-L	4	1.00	0.99	1.00	0.98	1%	W-80: H/L
W-80-M	2	1.00	1.00	1.01	0.99	1%	1.00
W-80-H	2	1.00	1.00	1.02	0.98	3%	
W-110	2	0.90	0.90	0.90	0.90	0%	-
Cs-137	2	0.78	0.78	0.79	0.77	2%	-
photon all	**16**	**1.00**	**1.02**	**1.35**	**0.77**	**16%**	**-**
All	**18**	**0.99**	**1.01**	**1.35**	**0.77**	**15%**	**-**

outliers: 0 of 18 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

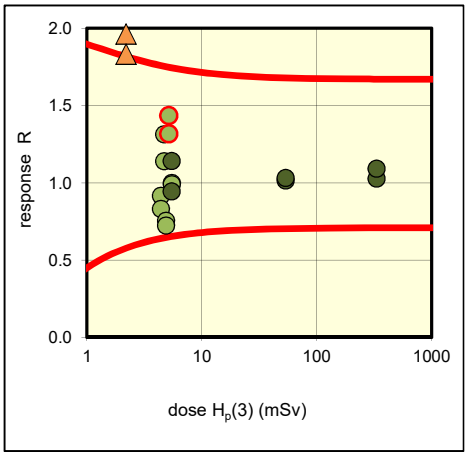
Reporting number 103 : Eye - photon/beta dosemeter

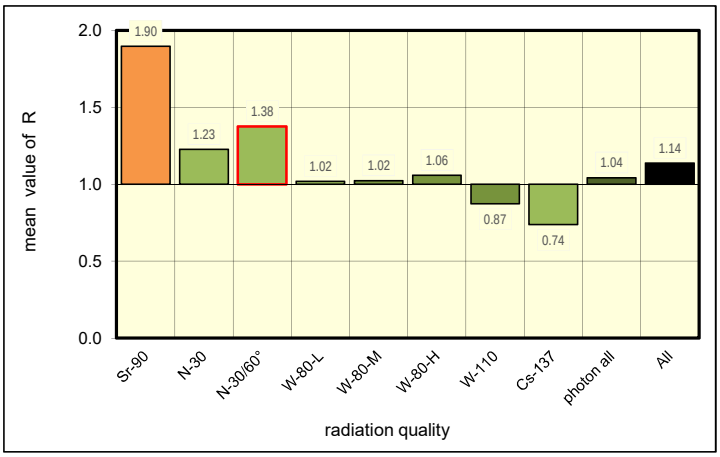
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	16	2.20	4.32	**1.96**	outlier
		21	2.20	4.03	**1.83**	outlier
photon	N-30	30	4.70	5.36	**1.14**	OK
		31	4.70	6.17	**1.31**	OK
	N-30/60°	27	5.20	7.46	**1.43**	OK
		29	5.20	6.85	**1.32**	OK
	W-80-L	2	5.50	5.19	**0.94**	OK
		7	5.50	5.49	**1.00**	OK
		15	5.50	6.27	**1.14**	OK
		17	5.50	5.45	**0.99**	OK
	W-80-M	1	54.0	54.81	**1.02**	OK
		4	54.0	55.66	**1.03**	OK
	W-80-H	9	333	341.52	**1.03**	OK
		11	333	363.28	**1.09**	OK
	W-110	5	4.40	4.03	**0.92**	OK
		6	4.40	3.66	**0.83**	OK
	Cs-137	8	4.90	3.70	**0.76**	OK
		10	4.90	3.54	**0.72**	OK
	NIR	3				
	NIR	12				
	NIR	13				
	NIR	14				
	NIR	18				
	NIR	19				
	NIR	20				
	NIR	22				
	NIR	23				
	NIR	24				
	NIR	25				
	NIR	26				
	NIR	28				
	NIR	32				

Legend for Quality
L ……. low dose
M …… medium dose
H …..… high dose
NIR ….. not irradiated
WIR …. wrongly irradiated

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	1.90	1.90	1.96	1.83	5%	-
N-30	2	1.23	1.23	1.31	1.14	10%	N-30: 60°/0°
N-30/60°	2	1.38	1.38	1.43	1.32	6%	1.12
W-80-L	4	0.99	1.02	1.14	0.94	8%	W-80: H/L
W-80-M	2	1.02	1.02	1.03	1.02	1%	1.00
W-80-H	2	1.06	1.06	1.09	1.03	4%	
W-110	2	0.87	0.87	0.92	0.83	7%	-
Cs-137	2	0.74	0.74	0.76	0.72	3%	-
photon all	**16**	**1.02**	**1.04**	**1.43**	**0.72**	**19%**	**-**
All	**18**	**1.03**	**1.14**	**1.96**	**0.72**	**29%**	**-**

outliers: 2 of 18 **fraction of outliers: 11%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

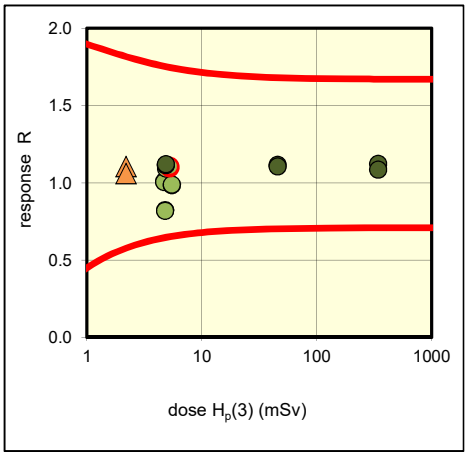
Reporting number 104 : Eye - photon dosemeter

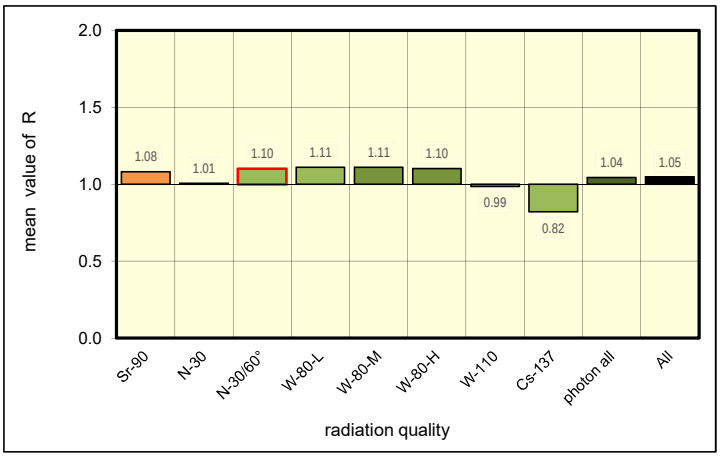
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	8	2.20	2.43	1.10	(OK)
		23	2.20	2.33	1.06	(OK)
photon	N-30	10	4.70	4.74	**1.01**	OK
		12	4.70	4.72	**1.00**	OK
	N-30/60°	28	5.30	5.81	**1.10**	OK
		30	5.30	5.86	**1.11**	OK
	W-80-L	6	4.90	5.46	**1.11**	OK
		7	4.90	5.35	**1.09**	OK
		16	4.90	5.49	**1.12**	OK
		17	4.90	5.45	**1.11**	OK
	W-80-M	25	46.0	51.36	**1.12**	OK
		29	46.0	50.85	**1.11**	OK
	W-80-H	31	344	385.81	**1.12**	OK
		32	344	372.81	**1.08**	OK
	W-110	20	5.50	5.41	**0.98**	OK
		21	5.50	5.43	**0.99**	OK
	Cs-137	24	4.80	3.95	**0.82**	OK
		27	4.80	3.93	**0.82**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	3				M …… medium dose
	NIR	4				H …..… high dose
	NIR	5				NIR ….. not irradiated
	NIR	9				WIR …. wrongly irradiated
	NIR	11				
	NIR	13				
	NIR	14				
	NIR	15				
	NIR	18				
	NIR	19				
	NIR	22				
	NIR	26				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	1.08	1.08	1.10	1.06	3%	-
N-30	2	1.01	1.01	1.01	1.00	0%	**N-30: 60°/0°**
N-30/60°	2	1.10	1.10	1.11	1.10	1%	1.09
W-80-L	4	1.11	1.11	1.12	1.09	1%	**W-80: H/L**
W-80-M	2	1.11	1.11	1.12	1.11	1%	1.00
W-80-H	2	1.10	1.10	1.12	1.08	2%	
W-110	2	0.99	0.99	0.99	0.98	0%	-
Cs-137	2	0.82	0.82	0.82	0.82	0%	-
photon all	**16**	**1.09**	**1.04**	**1.12**	**0.82**	**10%**	**-**
All	18	1.09	1.05	1.12	0.82	9%	-

outliers: 0 of 16 fraction of outliers: 0%





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

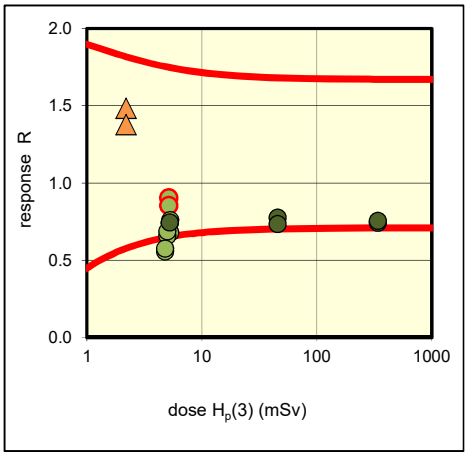
Reporting number 105 : Eye - photon dosemeter

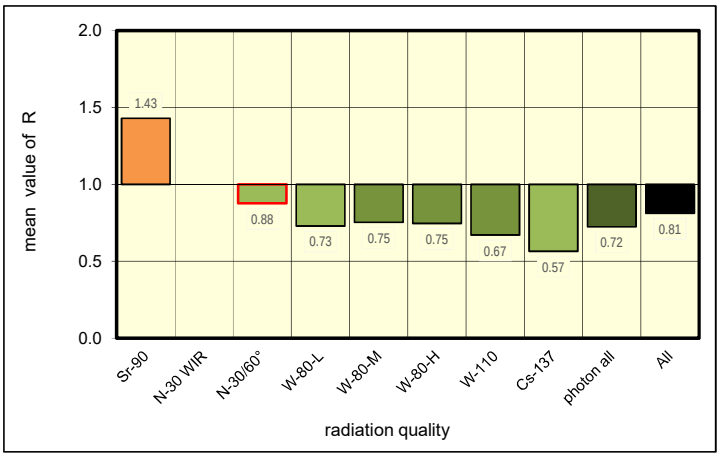
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	15	2.20	3.26	1.48	(OK)
		24	2.20	3.03	1.38	(OK)
photon	N-30 WIR					WIR
						WIR
	N-30/60°	5	5.20	4.69	**0.90**	OK
		6	5.20	4.43	**0.85**	OK
	W-80-L	3	5.30	3.92	**0.74**	OK
		7	5.30	3.59	**0.68**	OK
		25	5.30	3.94	**0.74**	OK
		26	5.30	4.02	**0.76**	OK
	W-80-M	14	46.0	35.64	**0.77**	OK
		16	46.0	33.67	**0.73**	OK
	W-80-H	11	342	252.98	**0.74**	OK
		13	342	257.49	**0.75**	OK
	W-110	30	5.00	3.28	**0.66**	OK
		31	5.00	3.43	**0.69**	OK
	Cs-137	18	4.80	2.67	**0.56**	outlier
		19	4.80	2.76	**0.58**	outlier
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	4				M …… medium dose
	NIR	10				H ……. high dose
	NIR	12				NIR ….. not irradiated
	NIR	17				WIR …. wrongly irradiated
	NIR	20				
	NIR	21				
	NIR	22				
	NIR	23				
	NIR	27				
	NIR	28				
	NIR	29				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	1.43	1.43	1.48	1.38	5%	-
N-30 WIR	0						
N-30/60°	2	0.88	0.88	0.90	0.85	4%	
W-80-L	4	0.74	0.73	0.76	0.68	5%	**W-80: H/L**
W-80-M	2	0.75	0.75	0.77	0.73	4%	1.03
W-80-H	2	0.75	0.75	0.75	0.74	1%	
W-110	2	0.67	0.67	0.69	0.66	3%	-
Cs-137	2	0.57	0.57	0.58	0.56	2%	-
photon all	**14**	**0.74**	**0.72**	**0.90**	**0.56**	**13%**	**-**
All	16	0.74	0.81	1.48	0.56	32%	-

outliers: 2 of 14 fraction of outliers: 14%





Results: $IC2019_{ext\ eye}$

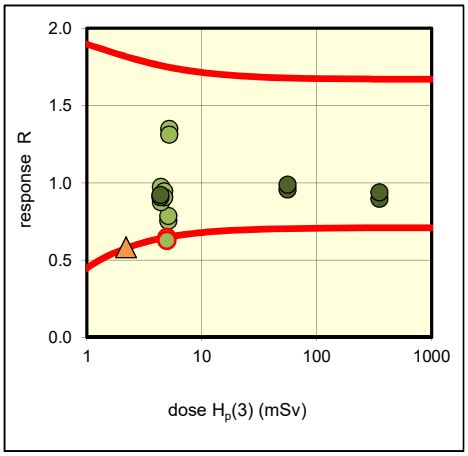
ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

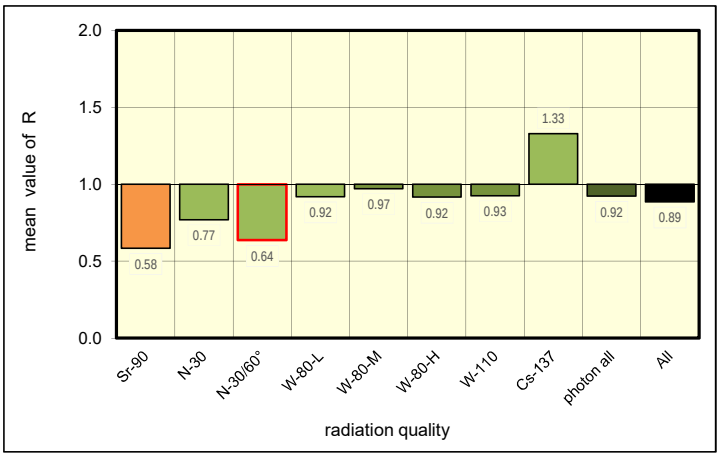
Reporting number 106 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	12	2.20	1.29	**0.59**	OK
		31	2.20	1.28	**0.58**	OK
photon	N-30	1	5.10	3.85	**0.75**	OK
		3	5.10	4.00	**0.78**	OK
	N-30/60°	29	5.00	3.23	**0.65**	outlier
		30	5.00	3.13	**0.63**	outlier
	W-80-L	4	4.40	3.99	**0.91**	OK
		5	4.40	3.85	**0.88**	OK
		20	4.40	4.05	**0.92**	OK
		21	4.40	4.28	**0.97**	OK
	W-80-M	23	56.0	53.52	**0.96**	OK
		24	56.0	55.32	**0.99**	OK
	W-80-H	10	354	317.02	**0.90**	OK
		11	354	332.02	**0.94**	OK
	W-110	13	4.70	4.44	**0.94**	OK
		14	4.70	4.26	**0.91**	OK
	Cs-137	7	5.20	7.01	**1.35**	OK
		8	5.20	6.82	**1.31**	OK
	NIR	2				**Legend for Quality**
	NIR	6				L ……. low dose
	NIR	9				M …… medium dose
	NIR	15				H ……. high dose
	NIR	16				NIR ….. not irradiated
	NIR	17				WIR …. wrongly irradiated
	NIR	18				
	NIR	19				
	NIR	22				
	NIR	25				
	NIR	26				
	NIR	27				
	NIR	28				
	NIR	32				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.58	0.58	0.59	0.58	1%	-
N-30	2	0.77	0.77	0.78	0.75	3%	N-30: 60°/0°
N-30/60°	2	0.64	0.64	0.65	0.63	2%	0.83
W-80-L	4	0.91	0.92	0.97	0.88	4%	W-80: H/L
W-80-M	2	0.97	0.97	0.99	0.96	2%	1.06
W-80-H	2	0.92	0.92	0.94	0.90	3%	
W-110	2	0.93	0.93	0.94	0.91	3%	-
Cs-137	2	1.33	1.33	1.35	1.31	2%	-
photon all	**16**	**0.91**	**0.92**	**1.35**	**0.63**	**21%**	**-**
All	**18**	**0.91**	**0.89**	**1.35**	**0.58**	**24%**	**-**

outliers: 2 of 18 fraction of outliers: 11%





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

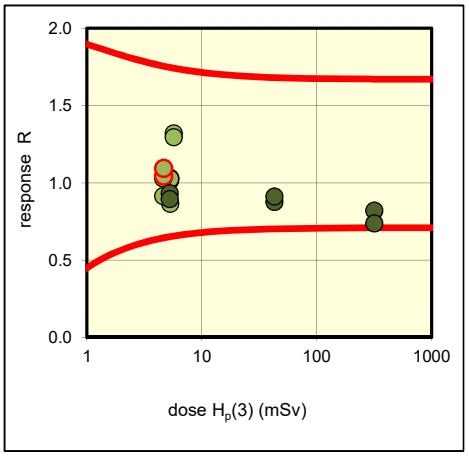
Reporting number 107 : Eye - photon dosemeter

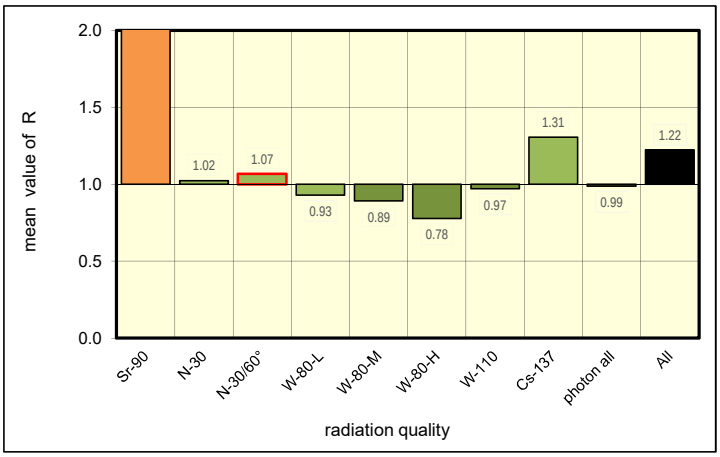
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	22	2.20	7.01	3.19	(outlier)
		24	2.20	6.67	3.03	(outlier)
photon	N-30	4	5.30	5.38	**1.02**	OK
		6	5.30	5.47	**1.03**	OK
	N-30/60°	11	4.70	4.90	**1.04**	OK
		12	4.70	5.14	**1.09**	OK
	W-80-L	16	5.30	4.94	**0.93**	OK
		18	5.30	5.44	**1.03**	OK
		28	5.30	4.74	**0.89**	OK
		31	5.30	4.58	**0.86**	OK
	W-80-M	19	43.0	37.67	**0.88**	OK
		21	43.0	39.12	**0.91**	OK
	W-80-H	2	319	261.40	**0.82**	OK
		3	319	234.89	**0.74**	OK
	W-110	20	4.60	4.73	**1.03**	OK
		23	4.60	4.20	**0.91**	OK
	Cs-137	13	5.70	7.52	**1.32**	OK
		14	5.70	7.38	**1.29**	OK
	NIR	1				**Legend for Quality**
	NIR	5				L ……. low dose
	NIR	7				M …… medium dose
	NIR	8				H ……. high dose
	NIR	9				NIR ….. not irradiated
	NIR	10				WIR …. wrongly irradiated
	NIR	15				
	NIR	17				
	NIR	25				
	NIR	26				
	NIR	27				
	NIR	29				
	NIR	30				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	3.11	3.11	3.19	3.03	4%	-
N-30	2	1.02	1.02	1.03	1.02	1%	**N-30: 60°/0°**
N-30/60°	2	1.07	1.07	1.09	1.04	3%	1.04
W-80-L	4	0.91	0.93	1.03	0.86	8%	**W-80: H/L**
W-80-M	2	0.89	0.89	0.91	0.88	3%	0.96
W-80-H	2	0.78	0.78	0.82	0.74	8%	
W-110	2	0.97	0.97	1.03	0.91	8%	-
Cs-137	2	1.31	1.31	1.32	1.29	1%	-
photon all	**16**	**0.97**	**0.99**	**1.32**	**0.74**	**16%**	**-**
All	18	1.02	1.22	3.19	0.74	57%	-

outliers: 0 of 16 fraction of outliers: 0%





Results: IC2019$_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

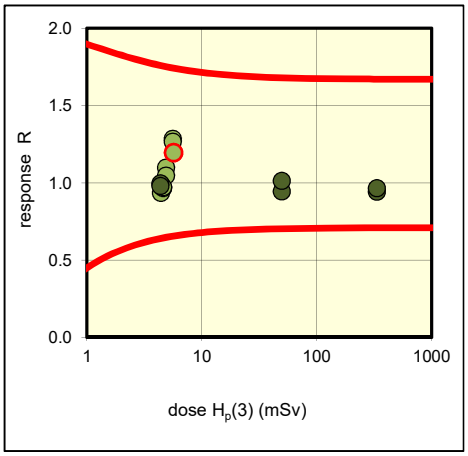
Reporting number 108 : Eye - photon dosemeter

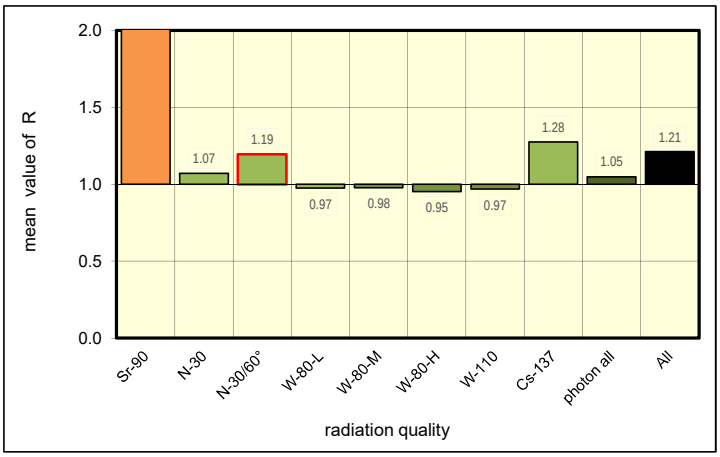
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	10	2.20	5.48	2.49	(outlier)
		31	2.20	5.62	2.55	(outlier)
photon	N-30	22	4.90	5.38	**1.10**	OK
		32	4.90	5.12	**1.05**	OK
	N-30/60°	16	5.70	6.81	**1.19**	OK
		17	5.70	6.81	**1.19**	OK
	W-80-L	23	4.40	4.38	**1.00**	OK
		24	4.40	4.36	**0.99**	OK
		28	4.40	4.31	**0.98**	OK
		30	4.40	4.11	**0.93**	OK
	W-80-M	26	50.0	47.21	**0.94**	OK
		27	50.0	50.56	**1.01**	OK
	W-80-H	1	335	315.37	**0.94**	OK
		2	335	322.79	**0.96**	OK
	W-110	20	4.60	4.44	**0.97**	OK
		21	4.60	4.47	**0.97**	OK
	Cs-137	6	5.60	7.19	**1.28**	OK
		7	5.60	7.09	**1.27**	OK
	NIR	3				**Legend for Quality**
	NIR	4				L ……. low dose
	NIR	5				M …… medium dose
	NIR	8				H ……. high dose
	NIR	9				NIR ….. not irradiated
	NIR	11				WIR …. wrongly irradiated
	NIR	12				
	NIR	13				
	NIR	14				
	NIR	15				
	NIR	18				
	NIR	19				
	NIR	25				
	NIR	29				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	2.52	2.52	2.55	2.49	2%	-
N-30	2	1.07	1.07	1.10	1.05	4%	**N-30: 60°/0°**
N-30/60°	2	1.19	1.19	1.19	1.19	0%	1.11
W-80-L	4	0.98	0.97	1.00	0.93	3%	**W-80: H/L**
W-80-M	2	0.98	0.98	1.01	0.94	5%	1.00
W-80-H	2	0.95	0.95	0.96	0.94	2%	
W-110	2	0.97	0.97	0.97	0.97	0%	-
Cs-137	2	1.28	1.28	1.28	1.27	1%	-
photon all	**16**	**0.99**	**1.05**	**1.28**	**0.93**	**11%**	**-**
All	18	1.00	1.21	2.55	0.93	40%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: IC2019$_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

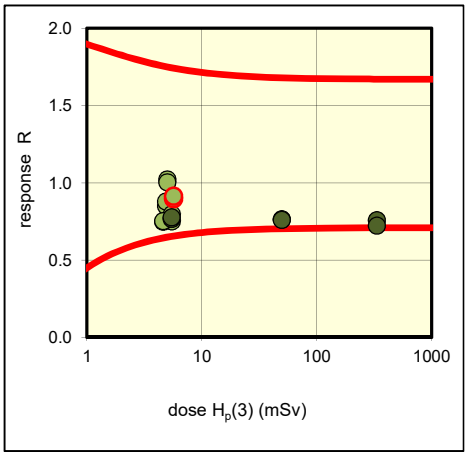
Reporting number 109 : Eye - photon dosemeter

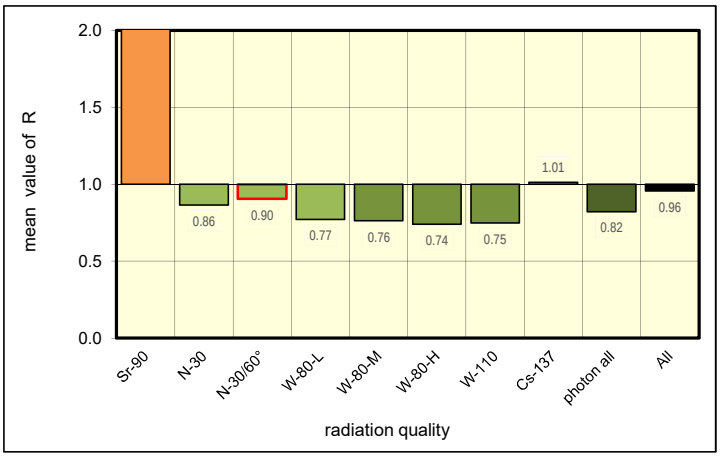
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	16	2.20	4.45	2.02	(outlier)
		24	2.20	4.47	2.03	(outlier)
photon	N-30	23	4.90	4.17	**0.85**	OK
		28	4.90	4.31	**0.88**	OK
	N-30/60°	15	5.70	5.11	**0.90**	OK
		17	5.70	5.21	**0.91**	OK
	W-80-L	5	5.50	4.21	**0.76**	OK
		9	5.50	4.13	**0.75**	OK
		21	5.50	4.27	**0.78**	OK
		22	5.50	4.38	**0.80**	OK
	W-80-M	18	50.0	38.20	**0.76**	OK
		20	50.0	38.00	**0.76**	OK
	W-80-H	3	335	253.70	**0.76**	OK
		4	335	241.70	**0.72**	OK
	W-110	1	4.60	3.44	**0.75**	OK
		2	4.60	3.46	**0.75**	OK
	Cs-137	30	5.00	5.11	**1.02**	OK
		32	5.00	5.02	**1.00**	OK
	NIR	6				**Legend for Quality**
	NIR	7				L ……. low dose
	NIR	8				M …… medium dose
	NIR	10				H ……. high dose
	NIR	11				NIR ….. not irradiated
	NIR	12				WIR …. wrongly irradiated
	NIR	13				
	NIR	14				
	NIR	19				
	NIR	25				
	NIR	26				
	NIR	27				
	NIR	29				
	NIR	31				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	2.03	2.03	2.03	2.02	0%	-
N-30	2	0.86	0.86	0.88	0.85	2%	**N-30: 60°/0°**
N-30/60°	2	0.90	0.90	0.91	0.90	1%	1.05
W-80-L	4	0.77	0.77	0.80	0.75	2%	**W-80: H/L**
W-80-M	2	0.76	0.76	0.76	0.76	0%	0.99
W-80-H	2	0.74	0.74	0.76	0.72	3%	
W-110	2	0.75	0.75	0.75	0.75	0%	-
Cs-137	2	1.01	1.01	1.02	1.00	1%	-
photon all	**16**	**0.77**	**0.82**	**1.02**	**0.72**	**11%**	**-**
All	18	0.79	0.96	2.03	0.72	42%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

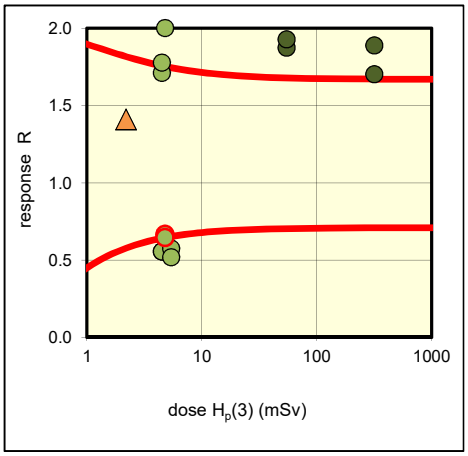
Reporting number 110 : Eye - photon dosemeter

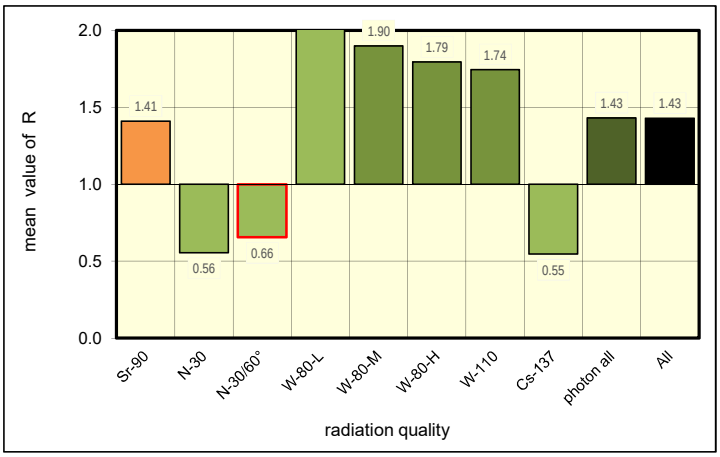
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	24	2.20	3.10	1.41	(OK)
		25	2.20	3.10	1.41	(OK)
photon	N-30	17	4.50	2.50	**0.56**	outlier
		18	4.50	2.50	**0.56**	outlier
	N-30/60°	3	4.80	3.20	**0.67**	OK
		4	4.80	3.10	**0.65**	outlier
	W-80-L	7	4.80	10.40	**2.17**	outlier
		8	4.80	9.60	**2.00**	outlier
		31	4.80	10.90	**2.27**	outlier
		32	4.80	9.90	**2.06**	outlier
	W-80-M	15	55.0	103.00	**1.87**	outlier
		16	55.0	106.00	**1.93**	outlier
	W-80-H	12	319	543.00	**1.70**	outlier
		13	319	602.00	**1.89**	outlier
	W-110	10	4.50	7.70	**1.71**	OK
		11	4.50	8.00	**1.78**	outlier
	Cs-137	5	5.40	3.10	**0.57**	outlier
		6	5.40	2.80	**0.52**	outlier
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	9				M …… medium dose
	NIR	14				H ……. high dose
	NIR	19				NIR ….. not irradiated
	NIR	20				WIR …. wrongly irradiated
	NIR	21				
	NIR	22				
	NIR	23				
	NIR	26				
	NIR	27				
	NIR	28				
	NIR	29				
	NIR	30				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	1.41	1.41	1.41	1.41	0%	-
N-30	2	0.56	0.56	0.56	0.56	0%	**N-30: 60°/0°**
N-30/60°	2	0.66	0.66	0.67	0.65	2%	1.18
W-80-L	4	2.11	2.13	2.27	2.00	6%	**W-80: H/L**
W-80-M	2	1.90	1.90	1.93	1.87	2%	0.89
W-80-H	2	1.79	1.79	1.89	1.70	7%	
W-110	2	1.74	1.74	1.78	1.71	3%	-
Cs-137	2	0.55	0.55	0.57	0.52	7%	-
photon all	**16**	**1.74**	**1.43**	**2.27**	**0.52**	**48%**	**-**
All	18	1.71	1.43	2.27	0.52	46%	-

outliers: 14 of 16 fraction of outliers: 88%





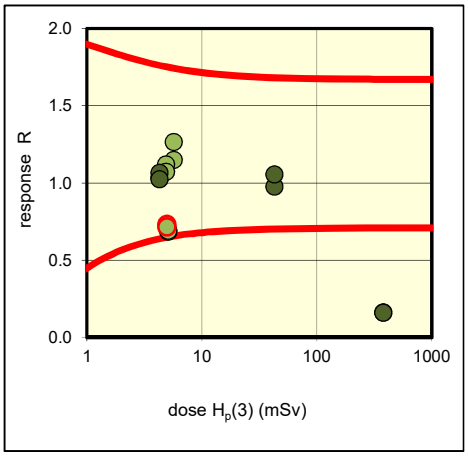
Results: $IC2019_{ext\ eye}$ 3 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

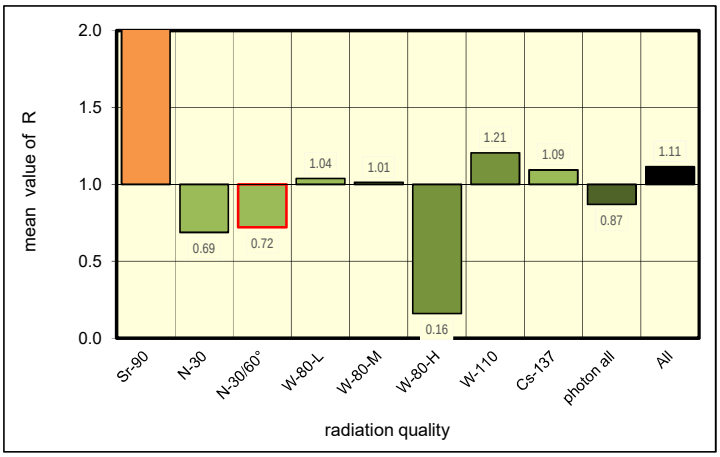
Reporting number 111 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	11	2.20	6.86	**3.12**	outlier
		15	2.20	6.65	**3.02**	outlier
photon	N-30	31	5.10	3.49	**0.68**	OK
		32	5.10	3.52	**0.69**	OK
	N-30/60°	3	5.00	3.65	**0.73**	OK
		6	5.00	3.57	**0.71**	OK
	W-80-L	4	4.30	4.57	**1.06**	OK
		5	4.30	4.45	**1.03**	OK
		8	4.30	4.40	**1.02**	OK
		9	4.30	4.44	**1.03**	OK
	W-80-M	1	43.0	41.88	**0.97**	OK
		2	43.0	45.29	**1.05**	OK
	W-80-H	21	381	61.03	**0.16**	outlier
		25	381	60.74	**0.16**	outlier
	W-110	12	5.70	7.20	**1.26**	OK
		13	5.70	6.54	**1.15**	OK
	Cs-137	22	4.90	5.48	**1.12**	OK
		23	4.90	5.25	**1.07**	OK
	NIR	7				**Legend for Quality**
	NIR	10				L ……. low dose
	NIR	14				M …… medium dose
	NIR	16				H ……. high dose
	NIR	17				NIR ….. not irradiated
	NIR	18				WIR …. wrongly irradiated
	NIR	19				
	NIR	20				
	NIR	24				
	NIR	26				
	NIR	27				
	NIR	28				
	NIR	29				
	NIR	30				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	3.07	3.07	3.12	3.02	2%	-
N-30	2	0.69	0.69	0.69	0.68	1%	**N-30: 60°/0°**
N-30/60°	2	0.72	0.72	0.73	0.71	2%	1.05
W-80-L	4	1.03	1.04	1.06	1.02	2%	**W-80: H/L**
W-80-M	2	1.01	1.01	1.05	0.97	6%	0.98
W-80-H	2	0.16	0.16	0.16	0.16	0%	
W-110	2	1.21	1.21	1.26	1.15	7%	-
Cs-137	2	1.09	1.09	1.12	1.07	3%	-
photon all	**16**	**1.03**	**0.87**	**1.26**	**0.16**	**38%**	**-**
All	**18**	**1.03**	**1.11**	**3.12**	**0.16**	**70%**	**-**

outliers: 4 of 18 fraction of outliers: 22%





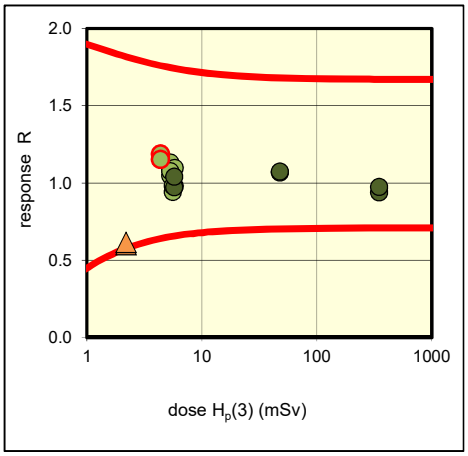
Results: IC2019$_{ext\ eye}$ 2 values out of diagramme range (>2)! ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

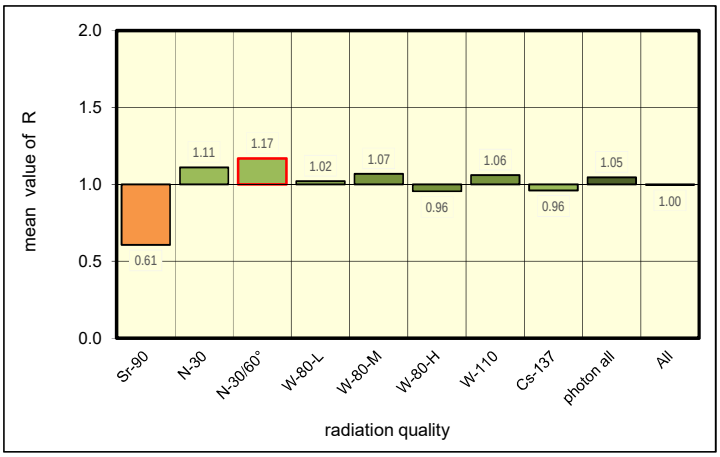
Reporting number 112 : Eye - photon/beta dosemeter

	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(0.07)$ mSv	response R (reported/true)	
beta	Sr-90	5	2.20	1.32	**0.60**	OK
		6	2.20	1.35	**0.61**	OK
photon	N-30	23	5.30	5.78	**1.09**	OK
		24	5.30	6.00	**1.13**	OK
	N-30/60°	1	4.40	5.22	**1.19**	OK
		2	4.40	5.06	**1.15**	OK
	W-80-L	20	5.80	5.63	**0.97**	OK
		22	5.80	6.36	**1.10**	OK
		31	5.80	6.02	**1.04**	OK
		32	5.80	5.67	**0.98**	OK
	W-80-M	26	48.0	51.13	**1.07**	OK
		28	48.0	51.44	**1.07**	OK
	W-80-H	16	350	327.97	**0.94**	OK
		18	350	340.67	**0.97**	OK
	W-110	12	5.30	5.54	**1.05**	OK
		13	5.30	5.70	**1.08**	OK
	Cs-137	14	5.60	5.27	**0.94**	OK
		15	5.60	5.49	**0.98**	OK
	NIR	3				**Legend for Quality**
	NIR	4				L ……. low dose
	NIR	7				M …… medium dose
	NIR	8				H ……. high dose
	NIR	9				NIR ….. not irradiated
	NIR	10				WIR …. wrongly irradiated
	NIR	11				
	NIR	17				
	NIR	19				
	NIR	21				
	NIR	25				
	NIR	27				
	NIR	29				
	NIR	30				

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.61	0.61	0.61	0.60	2%	-
N-30	2	1.11	1.11	1.13	1.09	3%	N-30: 60°/0°
N-30/60°	2	1.17	1.17	1.19	1.15	2%	1.05
W-80-L	4	1.01	1.02	1.10	0.97	6%	W-80: H/L
W-80-M	2	1.07	1.07	1.07	1.07	0%	1.05
W-80-H	2	0.96	0.96	0.97	0.94	3%	
W-110	2	1.06	1.06	1.08	1.05	2%	-
Cs-137	2	0.96	0.96	0.98	0.94	3%	-
photon all	**16**	**1.06**	**1.05**	**1.19**	**0.94**	**7%**	**-**
All	**18**	**1.04**	**1.00**	**1.19**	**0.60**	**16%**	**-**

outliers: 0 of 18 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv

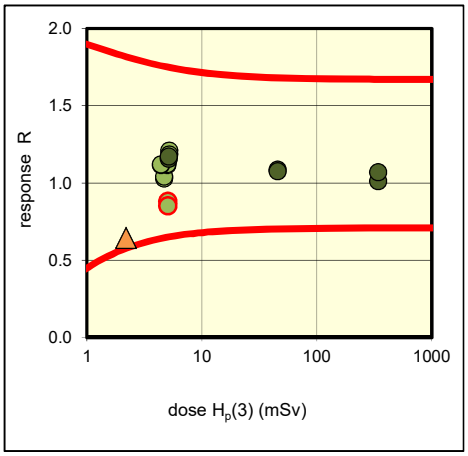
Reporting number 113 : Eye - photon dosemeter

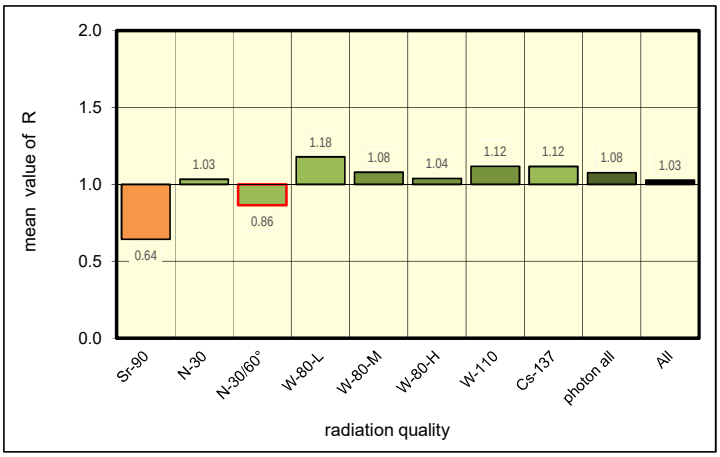
	true values reported by the irradiating laboratory			values reported by participant	results	
radiation type	radiation quality	dosemeter number	dose $H_p(3)$ mSv	dose $H_p(3)$ mSv	response R (reported/true)	
beta	Sr-90	9	2.20	1.42	0.65	(OK)
		18	2.20	1.41	0.64	(OK)
photon	N-30	21	4.70	4.83	**1.03**	OK
		22	4.70	4.89	**1.04**	OK
	N-30/60°	5	5.10	4.48	**0.88**	OK
		6	5.10	4.34	**0.85**	OK
	W-80-L	14	5.20	6.01	**1.16**	OK
		15	5.20	6.28	**1.21**	OK
		26	5.20	6.08	**1.17**	OK
		28	5.20	6.15	**1.18**	OK
	W-80-M	10	46.0	49.87	**1.08**	OK
		11	46.0	49.41	**1.07**	OK
	W-80-H	17	344	347.59	**1.01**	OK
		19	344	367.25	**1.07**	OK
	W-110	24	5.00	5.57	**1.11**	OK
		25	5.00	5.60	**1.12**	OK
	Cs-137	12	4.40	4.90	**1.11**	OK
		13	4.40	4.92	**1.12**	OK
	NIR	1				**Legend for Quality**
	NIR	2				L ……. low dose
	NIR	3				M …… medium dose
	NIR	4				H ……. high dose
	NIR	7				NIR ….. not irradiated
	NIR	8				WIR …. wrongly irradiated
	NIR	16				
	NIR	20				
	NIR	23				
	NIR	27				
	NIR	29				
	NIR	30				
	NIR	31				
	NIR	32				

beta results (xx) are greyed and were not considered

radiation quality	number of values	median (R)	mean (R)	maximum (R)	minimum (R)	coefficient of variation (R)	mean response ratios (R/R)
Sr-90	2	0.64	0.64	0.65	0.64	0%	-
N-30	2	1.03	1.03	1.04	1.03	1%	**N-30: 60°/0°**
N-30/60°	2	0.86	0.86	0.88	0.85	2%	0.84
W-80-L	4	1.18	1.18	1.21	1.16	2%	**W-80: H/L**
W-80-M	2	1.08	1.08	1.08	1.07	1%	0.92
W-80-H	2	1.04	1.04	1.07	1.01	4%	
W-110	2	1.12	1.12	1.12	1.11	0%	-
Cs-137	2	1.12	1.12	1.12	1.11	0%	-
photon all	**16**	**1.10**	**1.08**	**1.21**	**0.85**	**9%**	**-**
All	18	1.08	1.03	1.21	0.64	16%	-

outliers: 0 of 16 **fraction of outliers: 0%**





Results: $IC2019_{ext\ eye}$

ISO 14146:2018 trumpet curve, lower dose limit (H_0): 0.3 mSv