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FREQUENTLY ASKED SOLUTIONS

VON DEN METROLOGISCHEN GRUNDLAGEN DER STRAHLENMESSUNG ZUR PRAXIS (2)

Personendosimetrie & internationale Vergleichsmessungen (2008 – 2010)

Hannes Stadtmann

Radiation Protection Dosimetry
Seibersdorf Labor GmbH

BEV Zulassung Dosimeterservice

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BEV

Bundesamt für Eich- und Vermessungswesen

Ausnahmsweise Zulassung als Dosismessstelle zur individuellen Dosisüberwachung
GZ 5491 / 2009
vom 16. Februar 2011

4. Kenndaten, Ausführung

4.1. Strahlenart: Photonenstrahlung (Röntgen- und Gammastrahlung)

4.2. Messgröße: Tiefen- und Oberflächen- Personenäquivalentdosis $H_p(10)$ und $H_p(0,07)$

4.3. Bezugsort Sonde: Halbierungspunkt der Verbindungsstrecke zwischen den beiden Detektorkristallen (13 mm oberhalb der Mitte des runden Fensters) und Rückseite des Halters (Badge)

4.4. Vorzugsrichtung: Normal auf die vordere Sondenfläche (0°)

4.5. Anzeigebereich Dosis: 0,05 mSv bis 10 Sv

4.6. Messbereich Dosis: 0,1 mSv bis 10 Sv

Anforderungen

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Einflussgröße	Mindest-Nenngebrauchsbereich	Bezugswert der Einflussgröße	f_{min} ... f_{max}
mittlere Photonenenergie $\overline{E}$ und Strahleneinfalls-richtung α	Für $H_P(10)$: 20 keV bis 1,3 MeV oder Für $H_P(0,07)$: 10 keV bis 1,3 MeV und $-60° \leq \alpha \leq +60°$	662 keV ($\overline{E}$ von 137Cs) bzw. 100 keV ($\overline{E}$ von N-120) und 0° (Vorzugsrichtung)	- 29 % ... + 67 % [1)]
Dosis	Für $H_P(10)$:0,1 mSv bis 1 Sv Für $H_P(0,07)$:1 mSv bis 10 Sv	5 mSv	- 9 % ... + 11 % [1)]
Umgebungs-temperatur und relative Luftfeuchtigkeit	- 10 °C bis + 40 °C und 40 % bis 90 %	20 °C 65 %	- 17 % ... + 25 % [1)]

[1)] Das gilt als eingehalten, wenn für die Einflussgröße folgendes gilt: $f_{min} \leq 100 \cdot \left| \frac{A - A_0}{A_0} \right| \leq f_{max}$

wobei A das Ansprechvermögen bei einem beliebigen Wert der Einflussgröße innerhalb des Nenngebrauchsbereiches und A_0 das Ansprechvermögen beim Bezugswert der Einflussgröße darstellen.

Anforderungen

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4.7. Der maximal zulässige Variationskoeffizient der Anzeige einer Stichprobe von Dosimetern, ermittelt nach der Bestrahlung der Dosimetersonden mit der gleichen Personenäquivalentdosis unter gleichen Bestrahlungsbedingungen beträgt:

Messgröße	Dosisbereich	v_{max} in %
$H_P(10)$	$H_P(10) = 0{,}1$ mSv	15
	0,1 mSv ≤ $H_P(10)$ < 1,1 mSv	$16 - \frac{H_P(10)}{0{,}1\ \text{mSv}}$
	1,1 mSv ≤ $H_P(10)$	5
$H_P(0{,}07)$	$H_P(0{,}07)$ < 1 mSv	15
	1 mSv ≤ $H_P(0{,}07)$ < 11 mSv	$16 - \frac{H_P(0{,}07)}{1\ \text{mSv}}$
	11 mSv ≤ $H_P(0{,}07)$	5

Zulässige (Eich-) Fehlergrenzen

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5. Messtechnische Kontrolle, Fehlergrenzen

5.1. Die Fehlergrenzen des Mittelwertes der Anzeigen von Dosimetern, die mit der gleichen Personenäquivalentdosis bei Referenzbedingungen bestrahlt worden sind, betragen die in der folgenden Tabelle angegebenen Werte

Messgröße	Messbereich	Fehlergrenze	Referenzbedingungen
Dosis $H_P(10)$	< 1 mSv	± 40 %	Photonenenergie: 662 keV und Strahleneinfallsrichtung: Vorzugsrichtung
	≥ 1 mSv	± 25 %	
Dosis $H_P(0,07)$	< 1 mSv	± 40 %	Photonenenergie: 100 keV und Strahleneinfallsrichtung: Vorzugsrichtung
	≥ 1 mSv	± 25 %	

Publication RPD

Radiation Protection Dosimetry (2011), Vol. 144, No. 1–4, pp. 67–71
Advance Access publication 18 January 2011

doi:10.1093/rpd/ncq569

UNCERTAINTY ASSESSMENT OF A TWO ELEMENT LiF:Mg,Ti TL PERSONAL DOSEMETER USING MONTE-CARLO TECHNIQUES

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Dosimetry, 2444 Seibersdorf, Austria

This paper presents the results of an uncertainty assess
$H_p(0.07)$ used for evaluating a routine two-element th
response of the two different filtered LiF:Mg,Ti detecto
the relevant photon doses over the rated energy range
two different sets of parameters was designed to ass
$H_p(0.07)$. Based on the experimental results from cali
was performed by means of Monte-Carlo (MC) tech
individual detector element signals was taken into s
butions were applied to calculate the dosemeter r
perform uncertainty calculations. The possibility t
well as to define a complex model function (dose a

Table 2. Comparison of the results of the uncertainty calculation performed for symmetrical and more realistic PDFs.

Dose quantity	Dose (mSv)	Relative expanded uncertainty (U), $k = 2$		
		Analytic method	MC method	
		Symmetrical PDFs (%)	Symmetrical PDFs	Realistical PDFs (%)
$H_p(10)$	0.1	29.8	28.2	26.4
	1	18.4	17.5	15.8
$H_p(0.07)$	0.1	37.7	33.8	32.7
	1	22.7	21.4	25.8

Meßunsicherheiten Hp(10)

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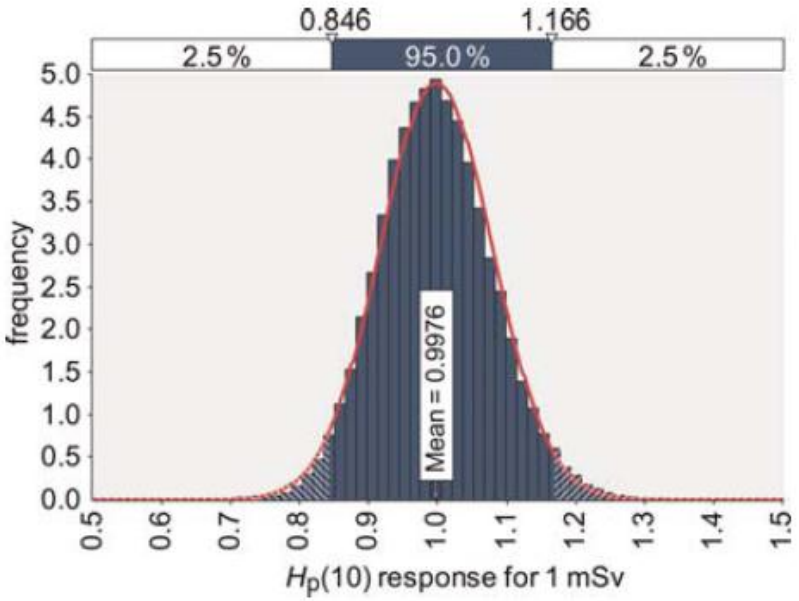

Figure 4. Probability distribution of the dose response for $H_p(10)$ for a dose value of 1 mSv. In addition a fitted gauss distribution is given for comparison.

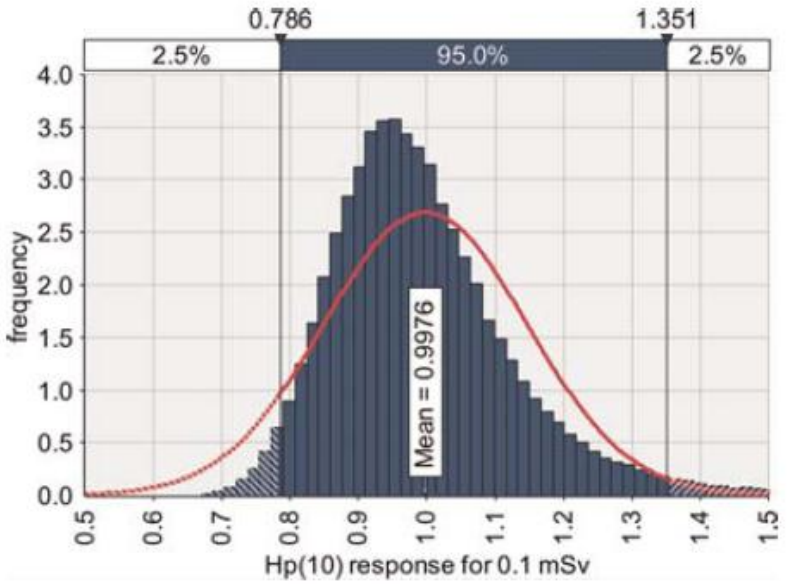

Figure 6. Probability distribution of the dose response for $H_p(10)$ for a low dose value of 0.1 mSv. In addition a fitted gauss distribution is given for comparison.

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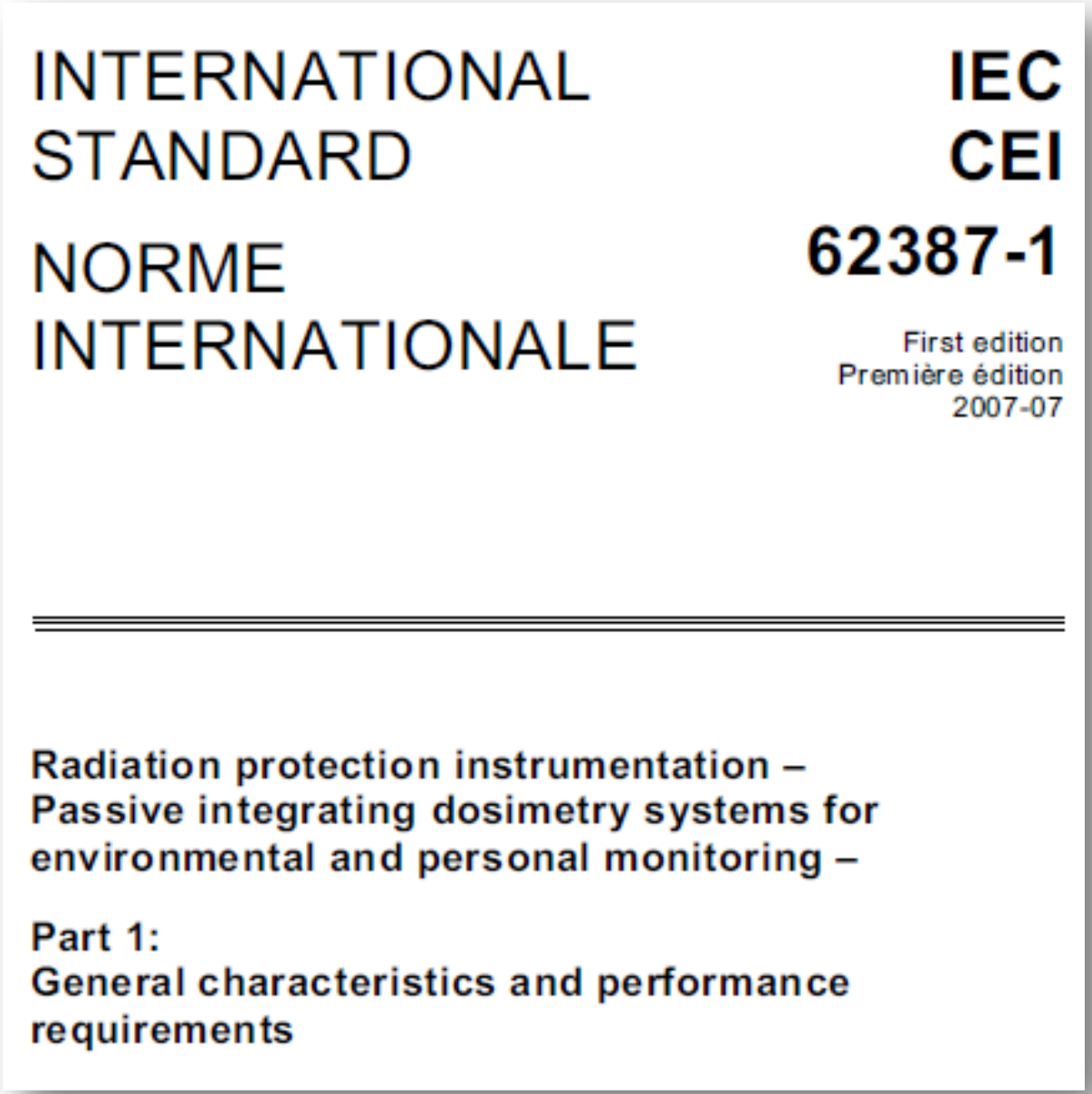

INTERNATIONAL STANDARD

NORME INTERNATIONALE

IEC
CEI

62387-1

First edition
Première édition
2007-07

Radiation protection instrumentation – Passive integrating dosimetry systems for environmental and personal monitoring –

Part 1: General characteristics and performance requirements

IEC – 62387 Teil 1

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Table 3 – Performance requirements for $H_p(10)$ dosemeters

Line	Characteristic under test	Main characteristics or minimal measuring range or minimal rated range of influence quantity	Performance requirement for the whole rated range	Sub-clause
6	Relative response due to non-linearity	0,1 mSv ≤ H ≤ 1 Sv	–9 % to +11 %	11.3
7	Coefficient of variation, v	H < 0,1 mSv 0,1 mSv ≤ H < 1,1 mSv H ≥ 1,1 mSv	15 % $\left(16 - \frac{H}{0{,}1\ \text{mSv}}\right)$ % 5 %	11.2
8	Overload, after-effects, and reusability	10 times the upper limit of the measuring range: $10 \cdot H_{up}$, however at maximum 10 Sv. Reused dosemeters shall fulfill the requirements	Perception to be off-scale on the high end side of the measuring range, after-effects may not cause fault measurements and $v(H_{low})$ shall be according to line 7	11.4
9	Relative response due to mean photon radiation energy and angle of incidence	80 keV to 1,25 MeV and 0° to ±60° from reference direction	–29 % to +67 %	11.5.1

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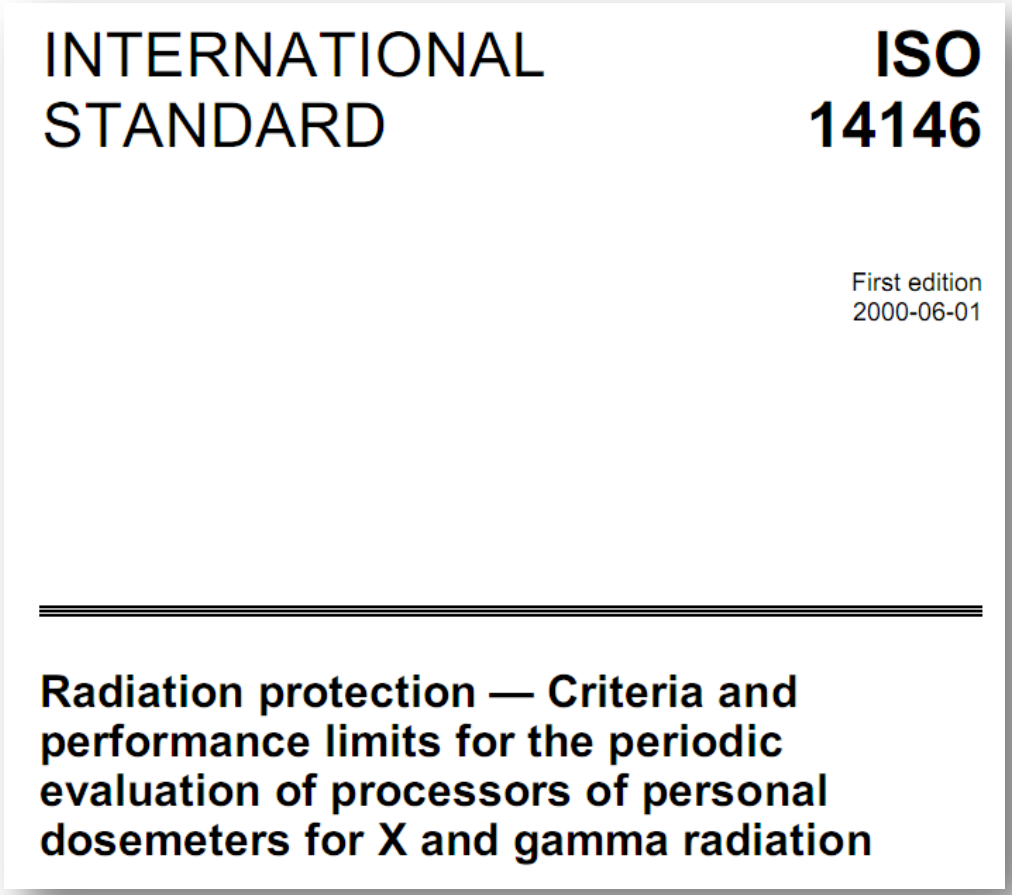
ISO 14146



INTERNATIONAL STANDARD

ISO 14146

First edition
2000-06-01

Radiation protection — Criteria and performance limits for the periodic evaluation of processors of personal dosemeters for X and gamma radiation

Trumpet curve

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$$\frac{1}{F}\left(1-\frac{2H_0}{H_0+H_c}\right)\leqslant R\leqslant F\left(1+\frac{H_0}{2H_0+H_c}\right)$$

7 Performance limits

For each irradiated dosemeter, the ratio R between the measured dose value H_s and the conventional true value H_c, given by

$$R=\frac{H_s}{H_c}$$

shall meet the following condition:

$$\frac{1}{F}\left(1-\frac{2H_0}{H_0+H_c}\right)\leqslant R\leqslant F\left(1+\frac{H_0}{2H_0+H_c}\right)$$

where F is a factor to limit the maximum error of the dosimetry system at high dose values and H_0 is the lower limit of the dose range stated in 6.3. According to ICRP 75, F should be equal to 1,5.

A maximum of one-tenth of the dosemeters irradiated may exceed the above limits.

Results IC2008

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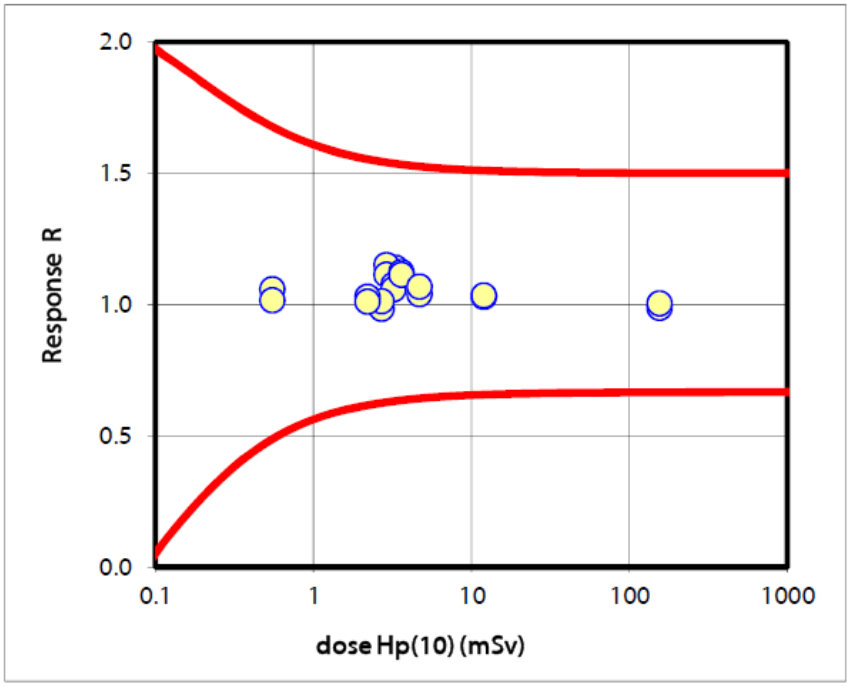
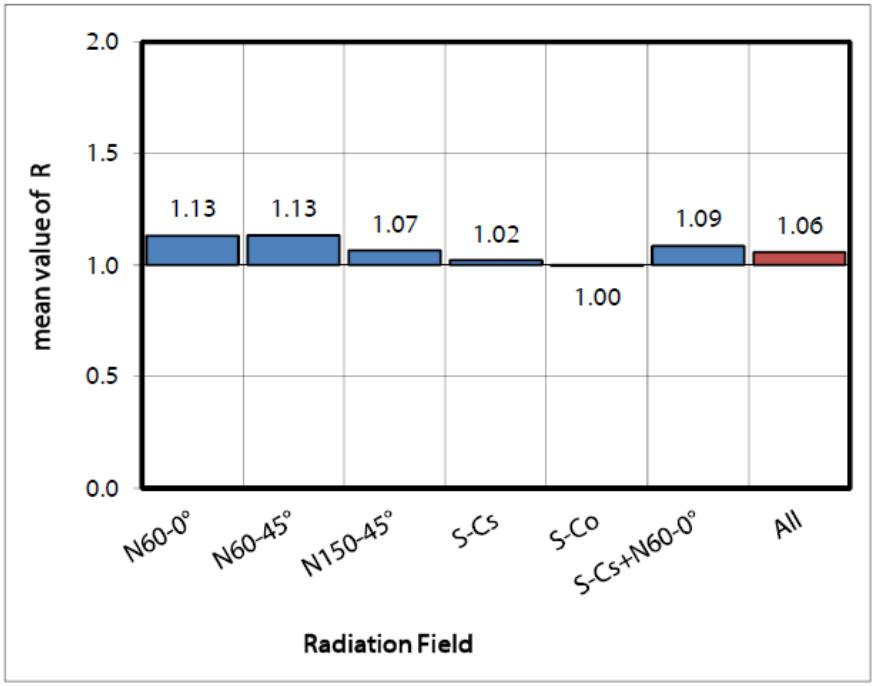
Number of outliers:	0	Arithmetic mean value of all R:	1.06
Fraction of outliers:	0%	Median value of all R:	1.05





Results: IC2008

trumpet parameter: 1.5/0.085 mSv

Results IC2010

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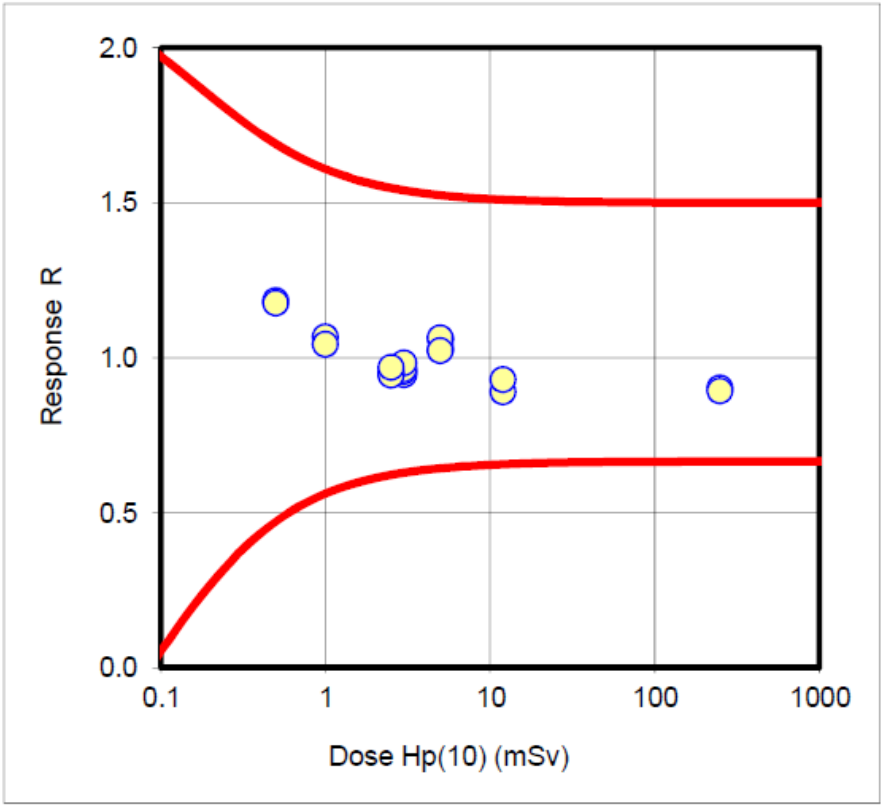
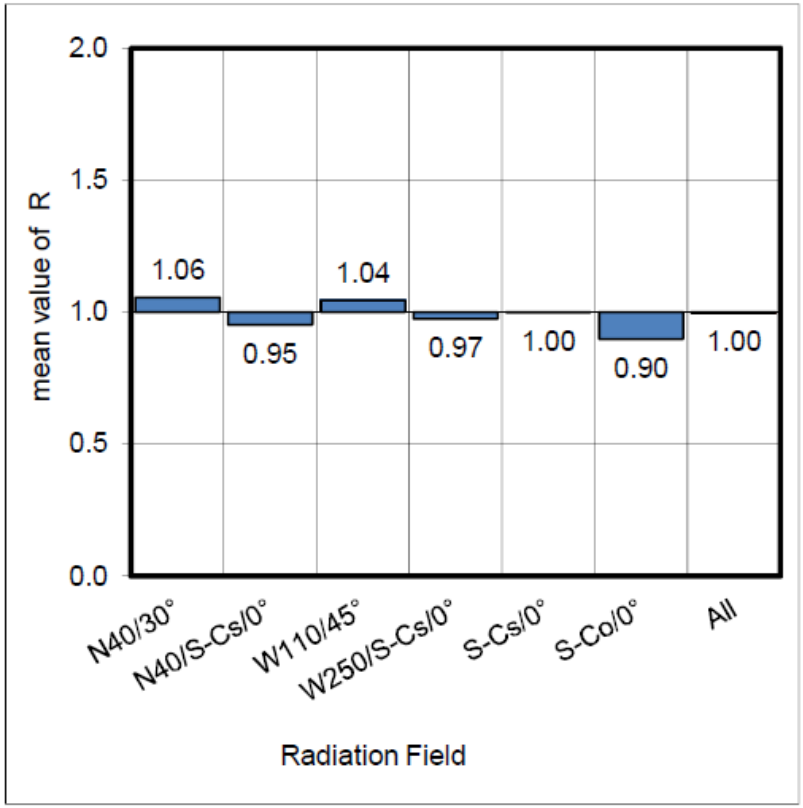
Number of outliers:	0	Arithmetic mean value of all R:	1.00
Fraction of outliers:	0%	Median value of all R:	0.97





trumpet parameter: 1.5/0.085 mSv

List of European Intercomparisons

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Organiser	year	# IMS	radiation	Dosim.	comment
IAEA	1988	20	photon	WB	Phase I
IAEA	1990	24	photon	WB	Phase II
IAEA	1997	??	photon	WB	“Type test”
IAEA	1998	23	photon	WB	"Simulated Workplace Field"
EURADOS	1998	26	photon	WB	"Simulated Workplace Fields"
EURADOS	1998	16	beta	WB	"Simulated Workplace Fields"
EURADOS	1998	8	beta	EXT	"Simulated Workplace Fields"
EURADOS	1998	17	neutron	WB	"Simulated Workplace Fields"
IAEA	1999	35	photon	WB	"Simulated Workplace Fields"
IAEA	2003	34	photon/ neutron	WB	Phase I
IAEA	2004	?	photon/ neutron	WB	Phase II (Simulated Workplace Fields
EURADOS/IAEA	2005	13	photon/beta	WB/APD	Reference And Workplace Fields
EURADOS/CONRAD	2007	6	photon	WB/APD	Interventional Radiology Fields
EURADOS/CONRAD	2007	24	photon/ beta	EXT	Reference And Workplace Fields
EURADOS	2008	52/62	photon	WB	Reference And mixed Fields
EURADOS	2009	44/59	photon/beta	EXT	Reference And mixed Fields
EURADOS	2010	70/85	photon	WB	Reference And mixed Fields
EURADOS	2012		photons	WB	
EURADOS	2012		neutrons	WB	

EURADOS Workinggroup2 / Subgroup 2: Self-supporting intercomparisons

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- Self-supporting regular intercomparison programm
  - Self-supporting: all costs covered by participants fees
  - Paid service to individual monitoring services
  - Periodicity: one intercomparison per year

photon **whole body** IC2008	Special **extremity** IC2009	photon **whole body** IC2010	Special **neutron** 2012 (2011)	photon **whole body** 2012	special

1 year

2 year

- Alternate whole body and specials
  - Specials: extremity, neutron, …?

Certificate of irradiation

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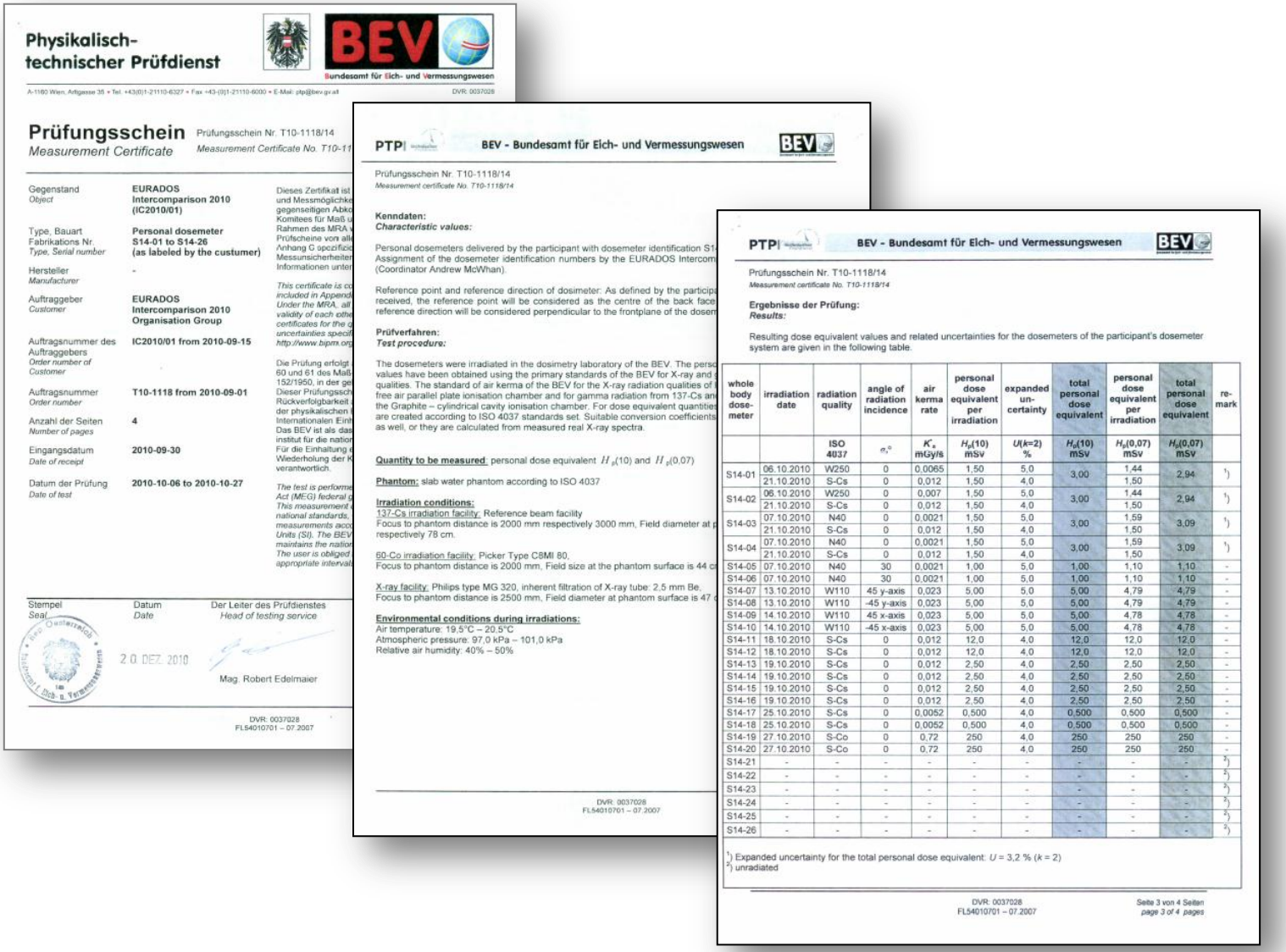

Physikalisch-technischer Prüfdienst

BEV Bundesamt für Eich- und Vermessungswesen

A-1160 Wien, Arltgasse 35 • Tel. +43(0)1-21110-6327 • Fax +43-(0)1-21110-6000 • E-Mail: ptp@bev.gv.at DVR: 0037028

Prüfungsschein Prüfungsschein Nr. T10-1118/14
Measurement Certificate *Measurement Certificate No. T10-11*

Gegenstand *Object*	**EURADOS Intercomparison 2010 (IC2010/01)**
Type, Bauart Fabrikations Nr. *Type, Serial number*	**Personal dosemeter S14-01 to S14-26 (as labeled by the custumer)**
Hersteller *Manufacturer*	-
Auftraggeber *Customer*	**EURADOS Intercomparison 2010 Organisation Group**
Auftragsnummer des Auftraggebers *Order number of Customer*	**IC2010/01 from 2010-09-15**
Auftragsnummer *Order number*	**T10-1118 from 2010-09-01**
Anzahl der Seiten *Number of pages*	**4**
Eingangsdatum *Date of receipt*	**2010-09-30**
Datum der Prüfung *Date of test*	**2010-10-06 to 2010-10-27**

Dieses Zertifikat ist ... und Messmöglichke... gegenseitigen Abko... Komitees für Maß u... Rahmen des MRA ... Prüfscheine von alle... Anhang C spezifizie... Messunsicherheiten ... Informationen unter ...

This certificate is co... included in Append... Under the MRA, all ... validity of each othe... certificates for the g... uncertainties specifi... http://www.bipm.org

Die Prüfung erfolgt ... 60 und 61 des Maß... 152/1950, in der ge... Dieser Prüfungssch... Rückverfolgbarkeit ... der physikalischen ... Internationalen Einh... Das BEV ist als das... institut für die nation... Für die Einhaltung ... Wiederholung der K... verantwortlich.

The test is performe... Act (MEG) federal g... This measurement ... national standards, ... measurements acc... Units (SI). The BEV ... maintains the natio... The user is obliged ... appropriate interval...

Stempel *Seal* | Datum *Date* | Der Leiter des Prüfdienstes *Head of testing service*

20. DEZ. 2010

Mag. Robert Edelmaier

DVR: 0037028
FL54010701 – 07.2007

PTP BEV - Bundesamt für Eich- und Vermessungswesen BEV

Prüfungsschein Nr. T10-1118/14
Measurement certificate No. T10-1118/14

Kenndaten:
Characteristic values:

Personal dosemeters delivered by the participant with dosemeter identification S1... Assignment of the dosemeter identification numbers by the EURADOS Intercom... (Coordinator Andrew McWhan).

Reference point and reference direction of dosimeter: As defined by the particip... received, the reference point will be considered as the centre of the back face ... reference direction will be considered perpendicular to the frontplane of the dosen...

Prüfverfahren:
Test procedure:

The dosemeters were irradiated in the dosimetry laboratory of the BEV. The pers... values have been obtained using the primary standards of the BEV for X-ray and ... qualities. The standard of air kerma of the BEV for the X-ray radiation qualities of ... free air parallel plate ionisation chamber and for gamma radiation from 137-Cs an... the Graphite – cylindrical cavity ionisation chamber. For dose equivalent quantities ... are created according to ISO 4037 standards set. Suitable conversion coefficients ... as well, or they are calculated from measured real X-ray spectra.

Quantity to be measured: personal dose equivalent $H_p(10)$ and $H_p(0,07)$

Phantom: slab water phantom according to ISO 4037

Irradiation conditions:
137-Cs irradiation facility: Reference beam facility
Focus to phantom distance is 2000 mm respectively 3000 mm, Field diameter at p... respectively 78 cm.

60-Co irradiation facility: Picker Type C8MI 80,
Focus to phantom distance is 2000 mm, Field size at the phantom surface is 44 c...

X-ray facility: Philips type MG 320, inherent filtration of X-ray tube: 2,5 mm Be,
Focus to phantom distance is 2500 mm, Field diameter at phantom surface is 47 ...

Environmental conditions during irradiations:
Air temperature: 19,5°C – 20,5°C
Atmospheric pressure: 97,0 kPa – 101,0 kPa
Relative air humidity: 40% – 50%

DVR: 0037028
FL54010701 – 07.2007

PTP BEV - Bundesamt für Eich- und Vermessungswesen BEV

Prüfungsschein Nr. T10-1118/14
Measurement certificate No. T10-1118/14

Ergebnisse der Prüfung:
Results:

Resulting dose equivalent values and related uncertainties for the dosemeters of the participant's dosemeter system are given in the following table.

whole body dose-meter	irradiation date	radiation quality	angle of radiation incidence	air kerma rate	personal dose equivalent per irradiation	expanded un-certainty	total personal dose equivalent	personal dose equivalent per irradiation	total personal dose equivalent	re-mark
		ISO 4037	α,°	K'_a mGy/s	$H_p(10)$ mSv	$U(k=2)$ %	$H_p(10)$ mSv	$H_p(0,07)$ mSv	$H_p(0,07)$ mSv	
S14-01	06.10.2010	W250	0	0,0065	1,50	5,0	3,00	1,44	2,94	1)
	21.10.2010	S-Cs	0	0,012	1,50	4,0		1,50		
S14-02	06.10.2010	W250	0	0,007	1,50	5,0	3,00	1,44	2,94	1)
	21.10.2010	S-Cs	0	0,012	1,50	4,0		1,50		
S14-03	07.10.2010	N40	0	0,0021	1,50	5,0	3,00	1,59	3,09	1)
	21.10.2010	S-Cs	0	0,012	1,50	4,0		1,50		
S14-04	07.10.2010	N40	0	0,0021	1,50	5,0	3,00	1,59	3,09	1)
	21.10.2010	S-Cs	0	0,012	1,50	4,0		1,50		
S14-05	07.10.2010	N40	30	0,0021	1,00	5,0	1,00	1,10	1,10	-
S14-06	07.10.2010	N40	30	0,0021	1,00	5,0	1,00	1,10	1,10	-
S14-07	13.10.2010	W110	45 y-axis	0,023	5,00	5,0	5,00	4,79	4,79	-
S14-08	13.10.2010	W110	-45 y-axis	0,023	5,00	5,0	5,00	4,79	4,79	-
S14-09	14.10.2010	W110	45 x-axis	0,023	5,00	5,0	5,00	4,78	4,78	-
S14-10	14.10.2010	W110	-45 x-axis	0,023	5,00	5,0	5,00	4,78	4,78	-
S14-11	18.10.2010	S-Cs	0	0,012	12,0	4,0	12,0	12,0	12,0	-
S14-12	18.10.2010	S-Cs	0	0,012	12,0	4,0	12,0	12,0	12,0	-
S14-13	19.10.2010	S-Cs	0	0,012	2,50	4,0	2,50	2,50	2,50	-
S14-14	19.10.2010	S-Cs	0	0,012	2,50	4,0	2,50	2,50	2,50	-
S14-15	19.10.2010	S-Cs	0	0,012	2,50	4,0	2,50	2,50	2,50	-
S14-16	19.10.2010	S-Cs	0	0,012	2,50	4,0	2,50	2,50	2,50	-
S14-17	25.10.2010	S-Cs	0	0,0052	0,500	4,0	0,500	0,500	0,500	-
S14-18	25.10.2010	S-Cs	0	0,0052	0,500	4,0	0,500	0,500	0,500	-
S14-19	27.10.2010	S-Co	0	0,72	250	4,0	250	250	250	-
S14-20	27.10.2010	S-Co	0	0,72	250	4,0	250	250	250	-
S14-21	-	-	-	-	-	-	-	-	-	2)
S14-22	-	-	-	-	-	-	-	-	-	2)
S14-23	-	-	-	-	-	-	-	-	-	2)
S14-24	-	-	-	-	-	-	-	-	-	2)
S14-25	-	-	-	-	-	-	-	-	-	2)
S14-26	-	-	-	-	-	-	-	-	-	2)

1) Expanded uncertainty for the total personal dose equivalent: $U = 3,2$ % ($k = 2$)
2) unradiated

DVR: 0037028
FL54010701 – 07.2007

Seite 3 von 4 Seiten
page 3 of 4 pages

EURADOS AM 2011 Prague - Participants meeting

SEIBERSDORF LABORATORIES

Publications

Radiation Protection Dosimetry
Radiation Measurements

EURADOS SELF SUSTAINED PROGRAMME OF INTERCOMPARISONS FOR INDIVIDUAL MONITORING SERVICES

T.W.M. Grimbergen[1,*], M. Figel[2], A. M. Romero[3], H. Stadtmann[4] and A.F. McWhan[5]

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[2] Helmholtz-Zentrum Muenchen, Germany
[3] Ciemat, Spain
[4] Seibersdorf Labor GmbH, Austria
[5] VT Group, United Kingdom

SECTION TITLE HERE

Radiation Protection Dosimetry (2010), Vol. 0, No. 0, pp. 0–0

RESULTS OF THE EURADOS EXTREMITY DOSEMETER INTERCOMPARISON 2009

H. Stadtmann[1,*], T.W.M. Grimbergen[2], M. Figel[3], A. M. Romero[4], and A.F. McWhan[5]

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[2] NRG, Radiation and Environment, the Netherlands
[3] Helmholtz-Zentrum Muenchen, Germany
[4] Ciemat, Spain
[5] VT Group, United Kingdom

Received X 2010, amended X 2010, accepted X 2010

This paper presents the results of an intercomparison for extremity dosemeters organize
59 systems were tested during this exercise including ring, stall and wrist dosemeters.
the selected fields of photons and beta radiation qualities on appropriate phantor
the dose quantity $H_p(0.07)$. All irradiations were carried out in selected acc
(Seibersdorf Laboratories - Austria and IRSN - France). The results show th
(^{85}Kr) and for beta irradiations with large angles of incidence (60°), r
responses. On the other hand, for photon irradiations down to energie
participants meeting was held at IM2010 with discussion on both p
problems.

mity dosemeter, personal dosemeter, int
EURADOS

ELSEVIER

Contents lists available at ScienceDirect

Radiation Measurements

journal homepage: www.elsevier.com/locate/radmeas

Radiation Measurements 46 (2011) 1829–1834

EURADOS intercomparisons on whole body and extremity dosemeters (2008–2009) — Results and comparison of different dosemeter designs

H. Stadtmann [a,*], T.W.M. Grimbergen [b], M. Figel [c], A.M. Romero [d], A.F. Mcwhan [e]

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[b] NRC, Radiation and Environment, Individual Monitoring, Arnhem, The Netherlands
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Dosemeter design

ABSTRACT

The EURADOS (European Radiation Dosimetry Group) working group (WG2) on
Monitoring in Europe has shown that intercomparisons are fundament
monitoring. As a result of these considerations, EURADOS started t
comparisons for individual monitoring services (IMS) in Europe. F
intercomparison exercises, one for whole body dosemeters and
Both exercises were performed without external fund
More than 120(!) different – mainly passive – do
and the results were analysed and compared
these exercises specific additional info
statistical analysis allows a detailed
meter type, detector material and
on the response values of
as directional respo
parameters e.g.
for differen
and

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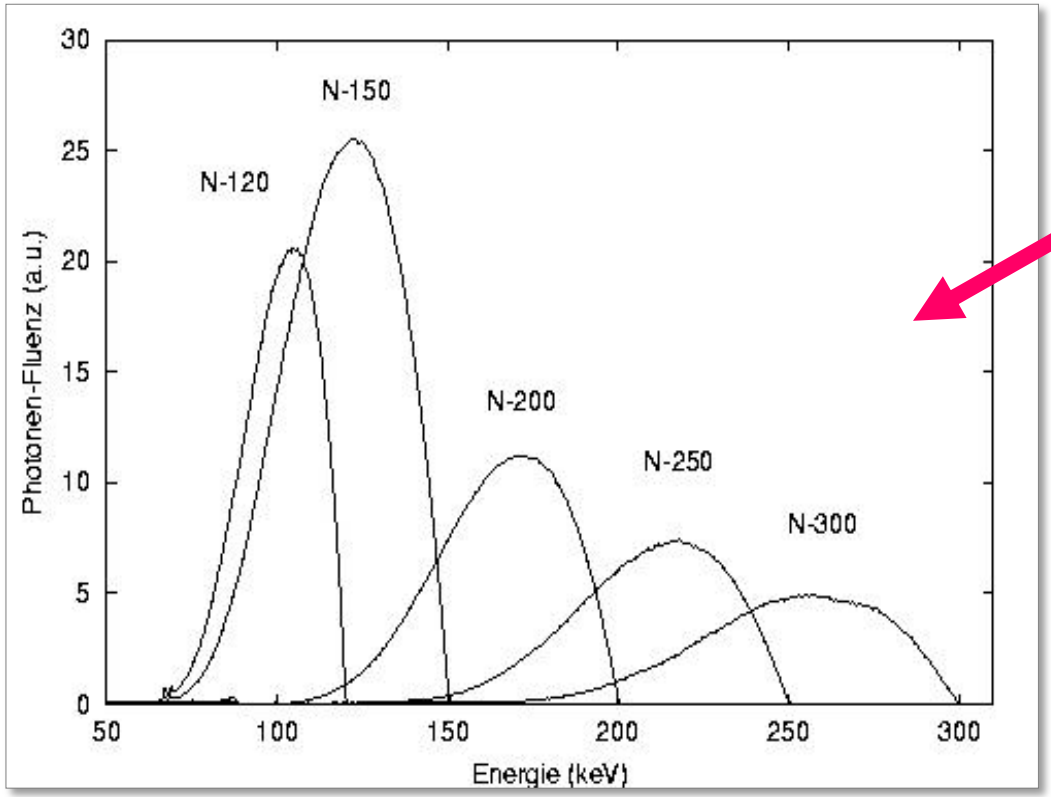
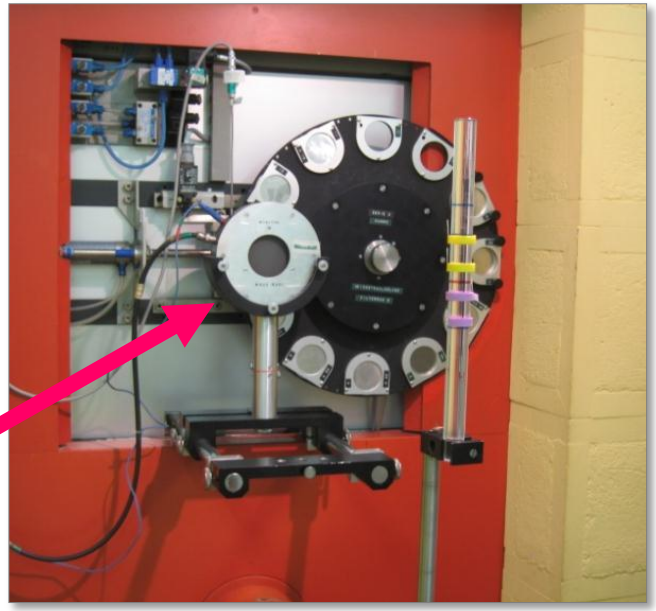
Photon-radiation fields (ISO 4037-1)

ISO Standard x-ray qualities

- E.g. N-series, 30 keV to 300 keV





ISO 4037: N-80 and W-80

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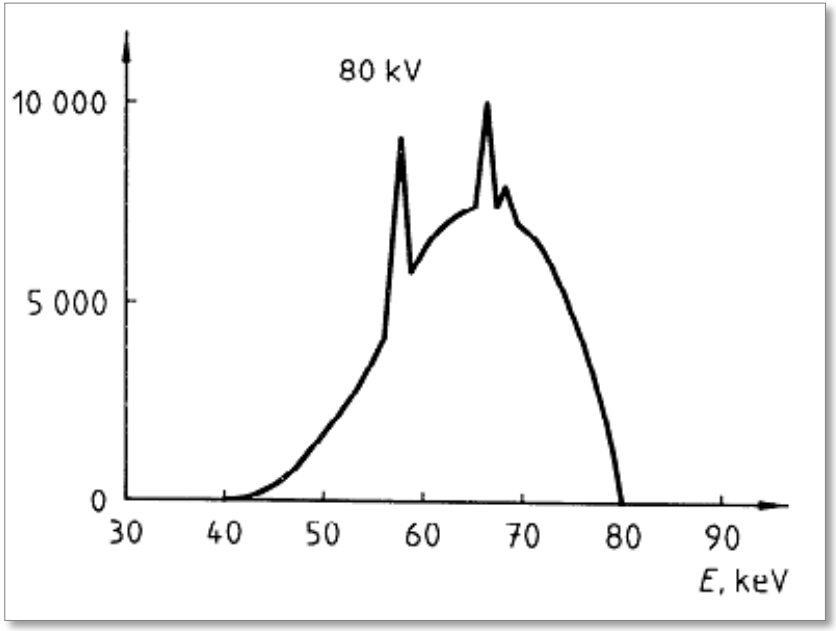
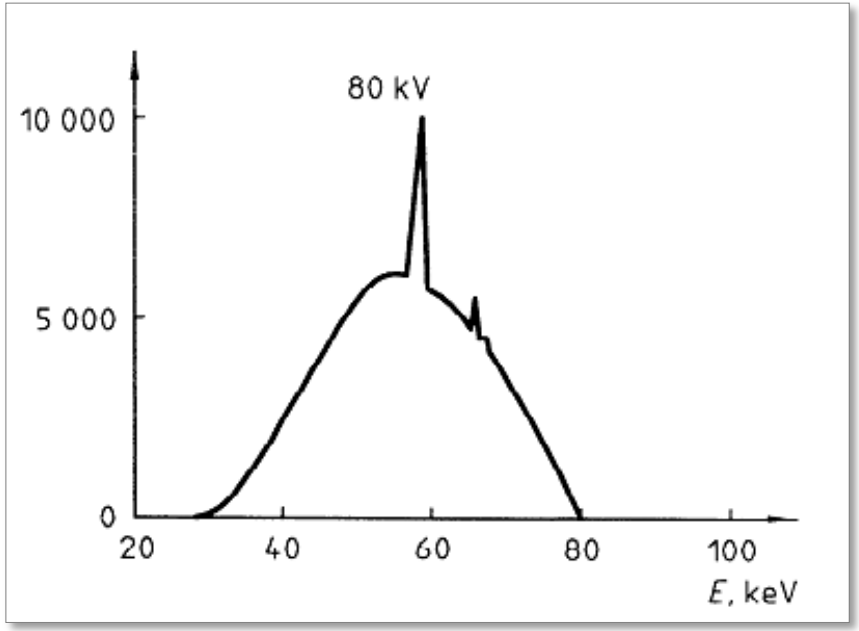


N-80 (65 keV)



W-80 (57 keV)

ISO 4037

Calibration phantoms / irradiation set up

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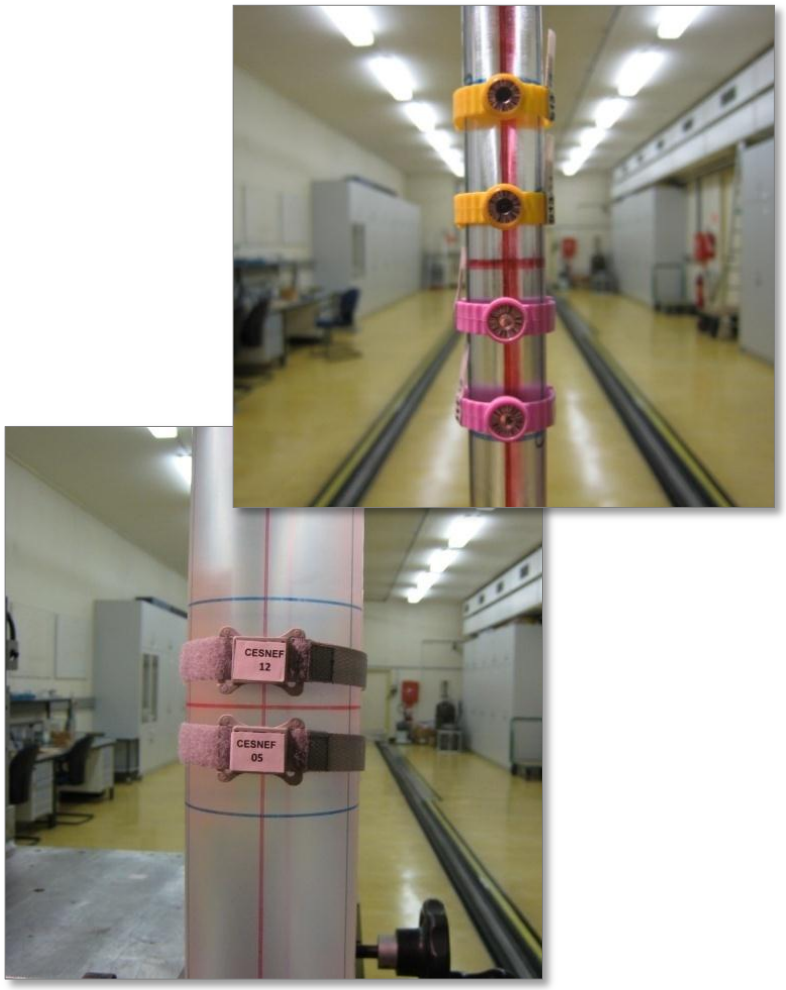
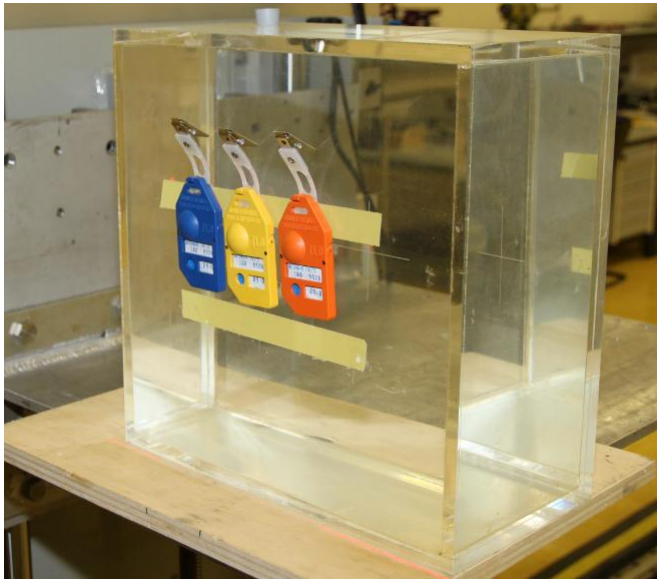
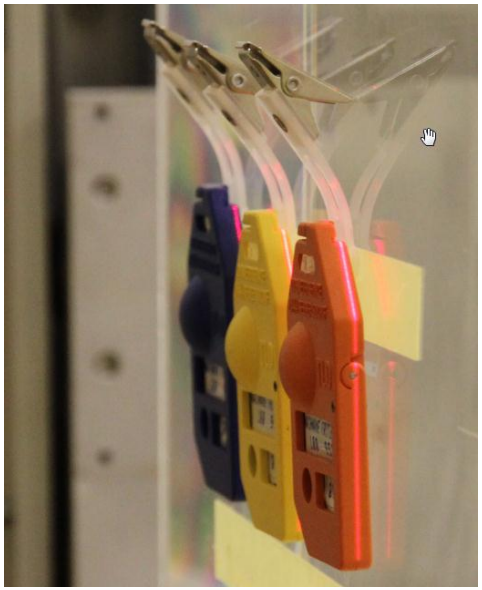
whole body dosemeter



extremity dosemeter





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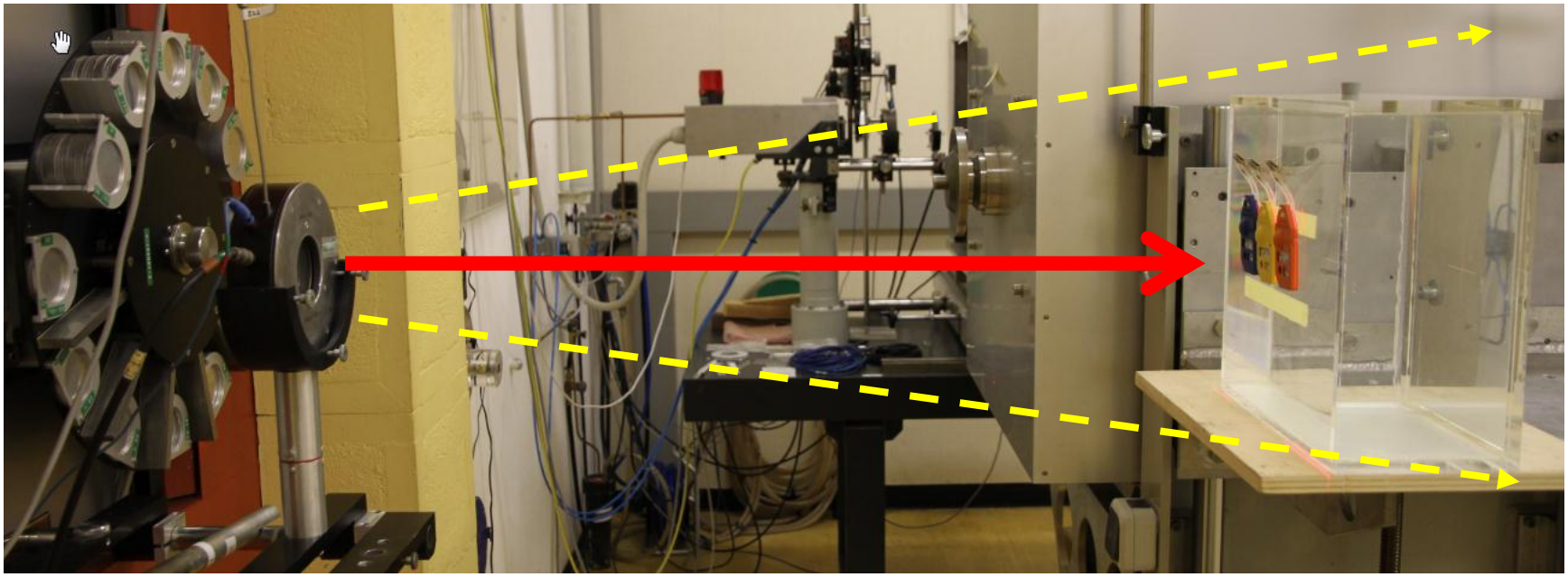
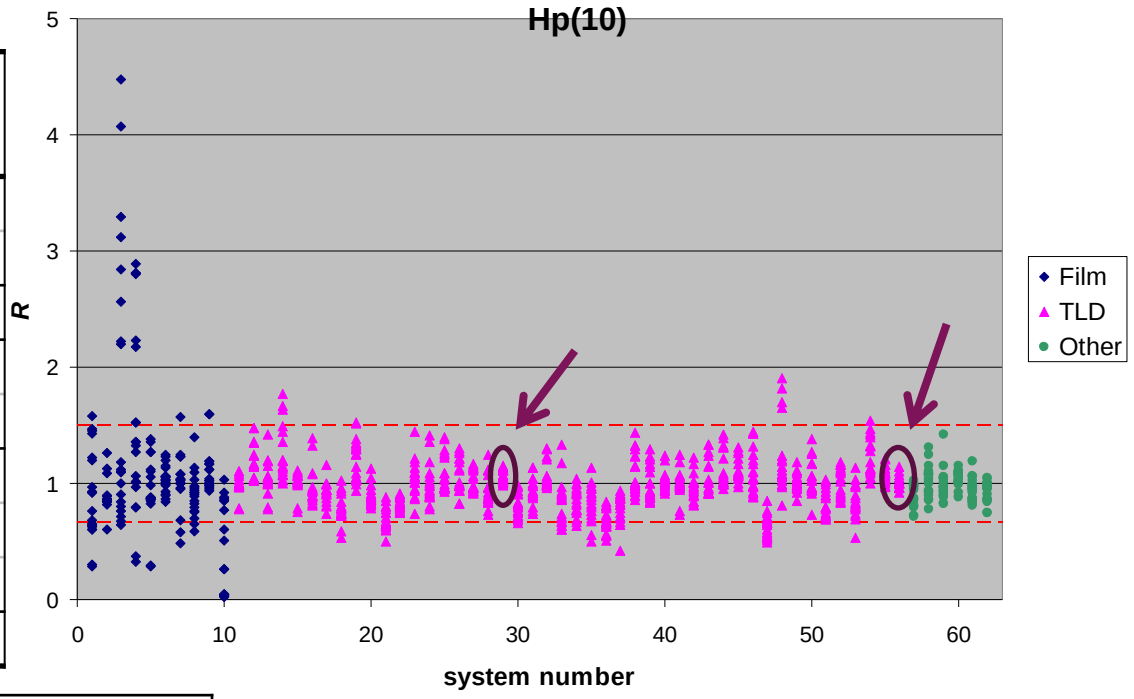
Minimum distance approx. 2,5 m



IC 2008 for whole body dosmeters

Quality	$H_p(10)$, $H_p(0,07)$ (mSv)	Number of dosemeters
N-60	3	2
N-60 45°	3	2
N-150 45°	3	2
N-60 + S-Cs	(3 + 1)	2
S-Cs + N-60	(3 + 1)	2
S-Cs	0.5	2
	3	4
	10	2
S-Co	150	2



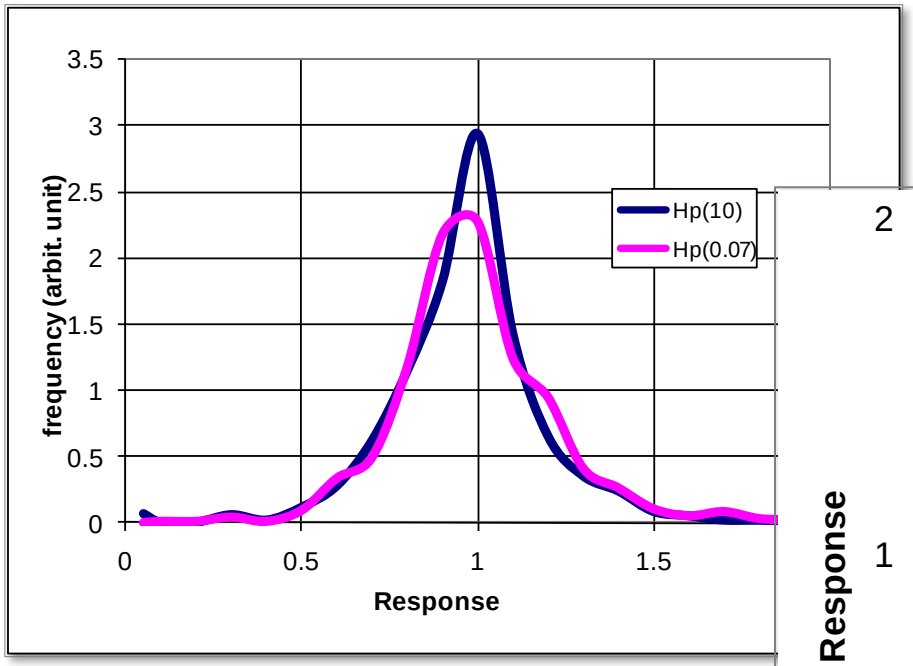
Participants	52 IMS / 62 systems from 24 countries (only 48 with both Hp(10) and Hp(0,07))
Type	Film (10) TLD (46) Others (6)
Irradiations	GAEC (Greek Atomic Energy Commission)

Hp(10) results out of range:

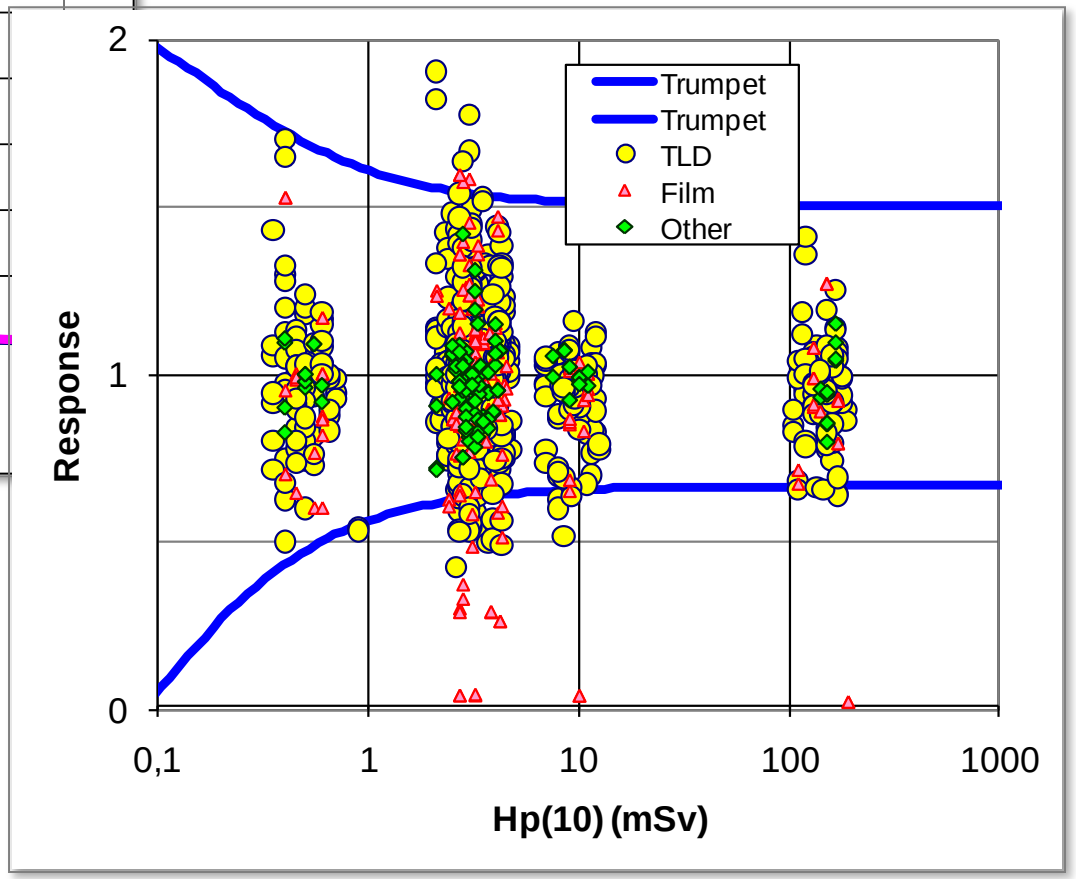
Singel results: 7%, services: 40%

IC 2008 for whole body dosmeters

SEIBERSDORF LABORATORIES

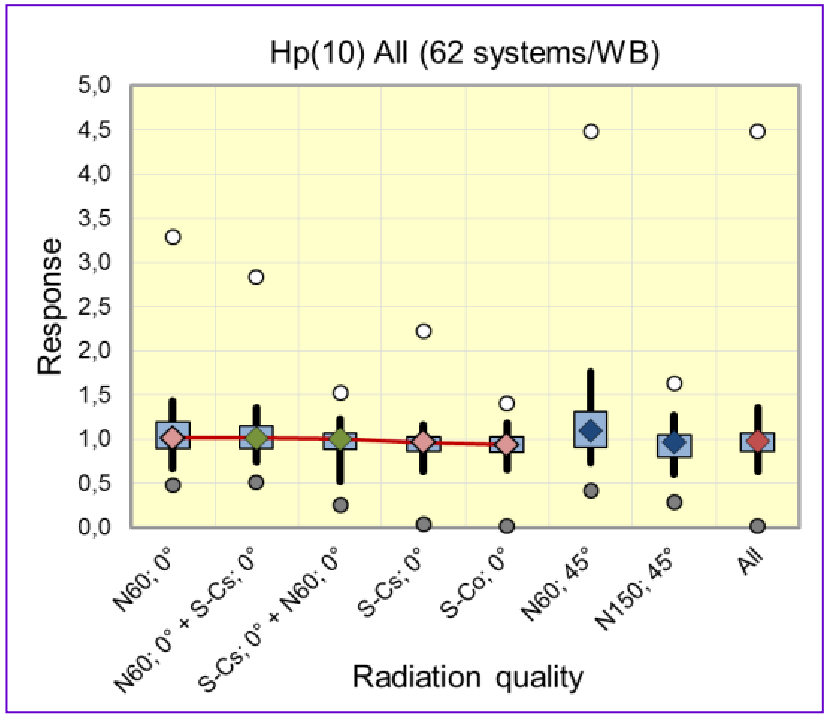


52 participants 62 systems
Photon radiation



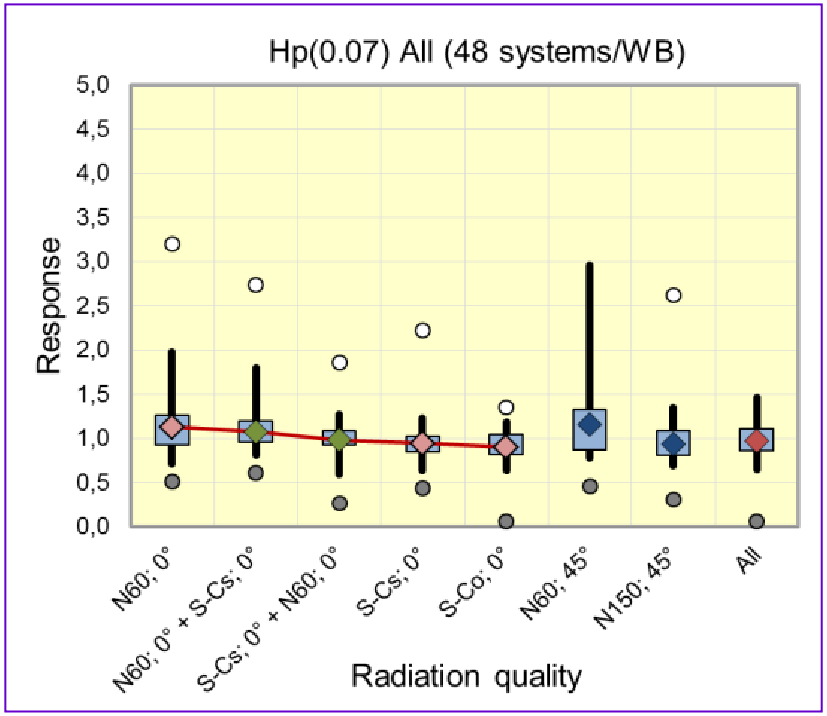
IC 2008 for whole body dosmeters

SEIBERSDORF LABORATORIES
FREQUENTLY ASKED SOLUTIONS



- 74% of the systems met the trumpet curve criteria (maximum 2 “outliers”)
- 60% of the systems had no values out of range

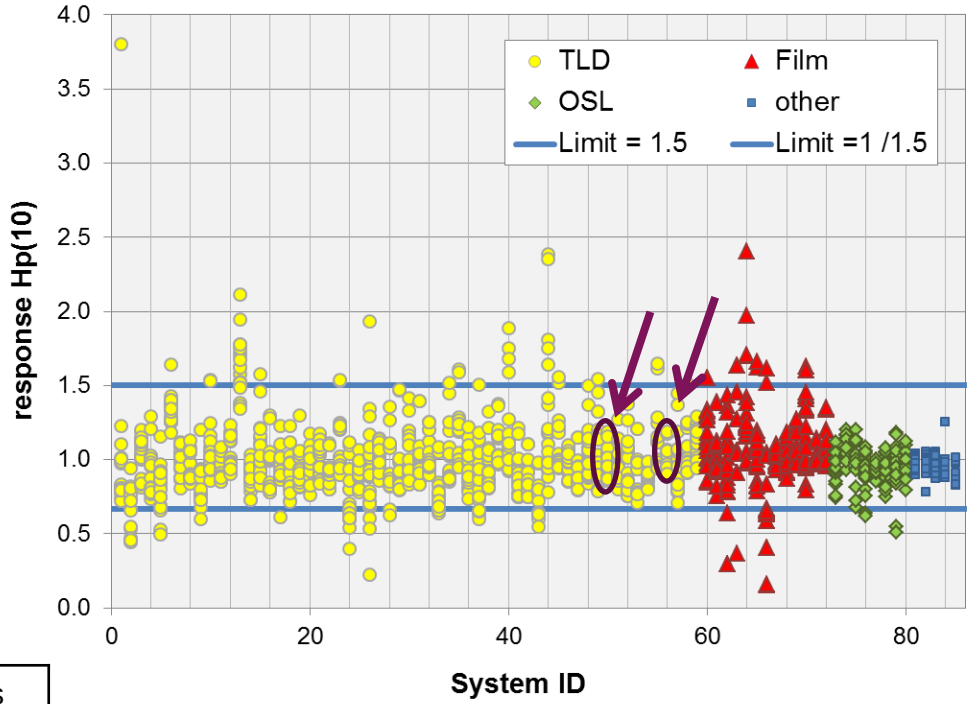
- 63% of the systems were TLDs using LiF:Mg,Ti as the detector
- Greater variation observed for Hp(0,07) compared to Hp(10) results
- Marked difficulty for some systems with N-60 45º



IC 2010 for whole body dosemeters

SEIBERSDORF LABORATORIES
FREQUENTLY ASKED SOLUTIONS

Quality	$H_p(10)$, $H_p(0,07)$ (mSv)	Number of dosemeters
N-40 30º	1	2
N-40 + S-Cs	3	2
W-110 45° X	5	2
W-110 45° Y	5	2
W-250 + S-Cs	3	2
S-Cs	0.5	2
	2.5	4
	12	2
S-Co	250	2

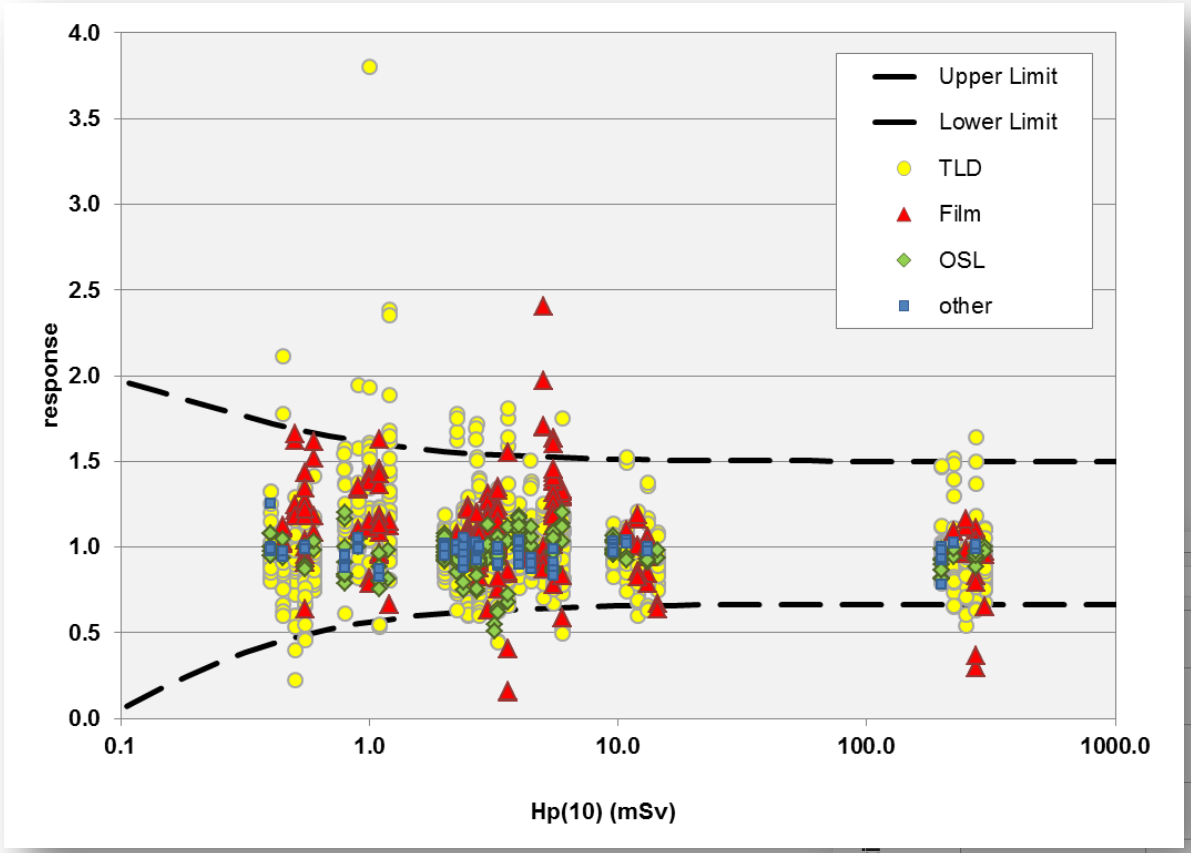


Participants	70 IMS / 85 systems from 30 countries (only 66 with both Hp(10) and Hp(0,07))
Type	Film – 13 TLD – 59 OSL- 8 Other - 5
Irradiations	BEV - Austria

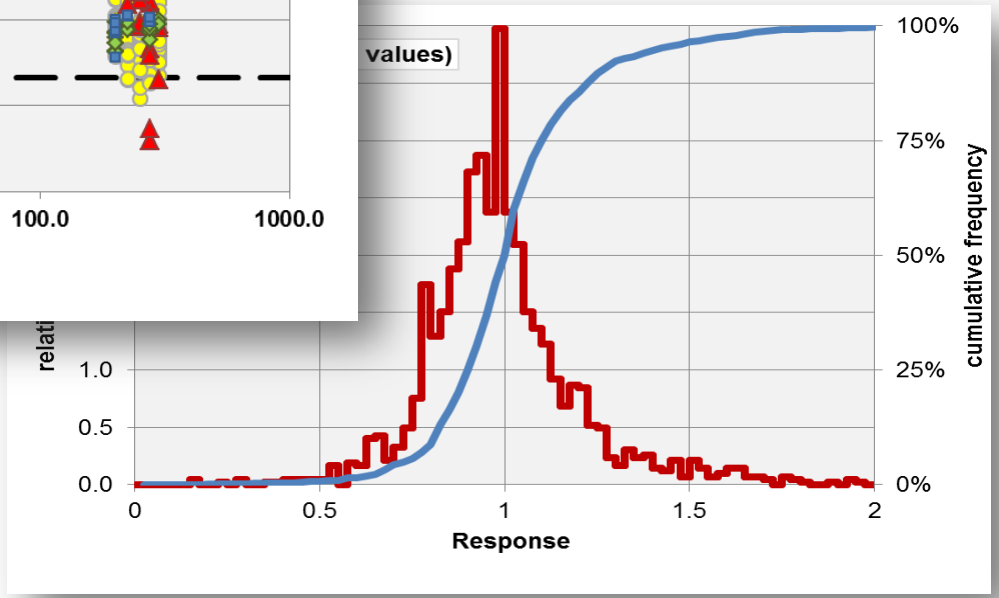
Hp(10) results out of range:

Single results: 5%, services: 26%

IC 2010 for whole body dosemeters

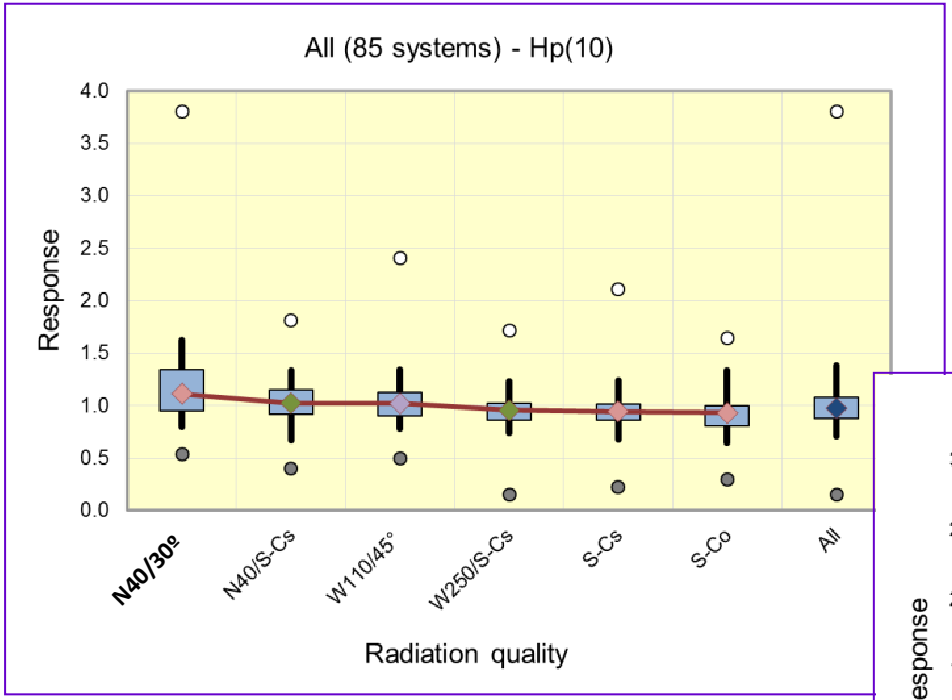


70 participants, 85 systems
Photon radiation

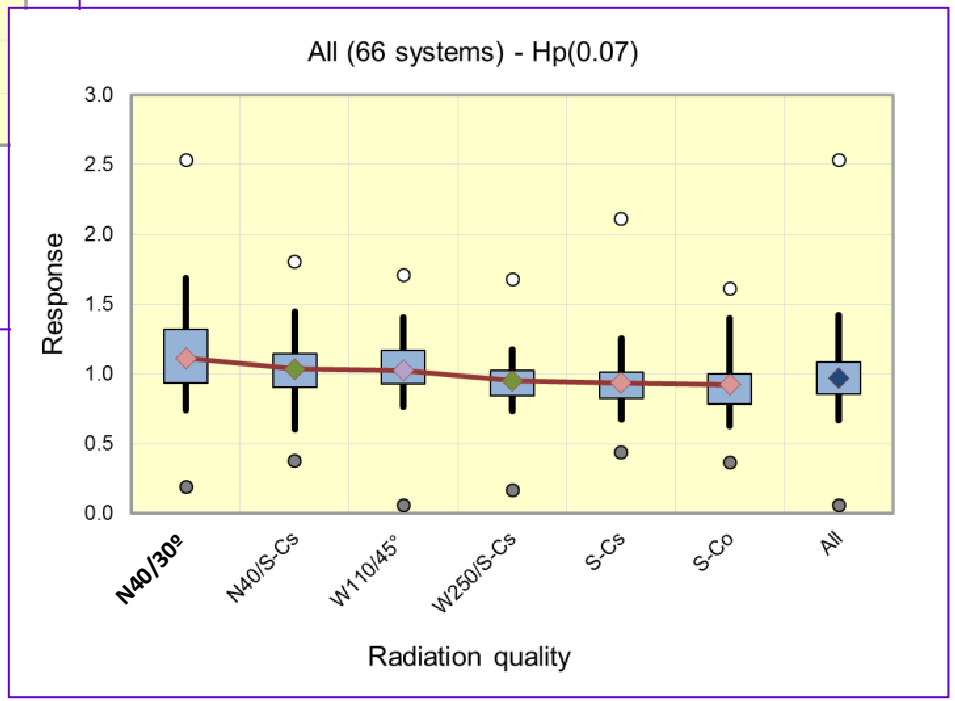


IC 2010 for whole body dosemeters

SEIBERSDORF LABORATORIES
FREQUENTLY ASKED SOLUTIONS



- 86% of systems met the criteria for trumpet curves (maximum 2 "outliers")
- 74% without any value out of range



- 63% of TLD systems used LiF:Mg,Ti as a detector
- Greater spread of results for Hp(0.07) than for Hp(10)
- Marked problems for some systems for N40/30 °

Whole body dosemeters (IC08)

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Ring dosemeters (IC09)

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EURADSOS Report 2012-01

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Announcements 2012

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European Radiation Dosimetry Group

EURADOS

Announcement of the

EURADOS intercomparison 2012 for whole body photon dosemeters (IC2012)

Over the last decade EURADOS, through its W
work on harmonisation of individual monit
carry out a feasibility study for a programm
of improving the harmonization of indiv
Following the feasibility study, EURADO
2008 & 2010 intercomparisons for wh
dosemeters have been complete
intercomparison (IC2012) for whole

Scope

The 2012 intercomparison is for

Irradiations, restricted to pho
irradiation facility in terms of

- Energy: 30 keV to 1,
- Dose equivalent: 0
- Angle of incidenc

Group 2 (WG2), has been carrying out a programme of
WG2 Subgroup 2 was established specifically to
ercomparisons in Europe with the aims
MS to comply with ISO 17025.
the programme. The
for extremity
2012

European Radiation Dosimetry Group

EURADOS

Announcement of the

EURADOS Intercomparison 2012 for whole body neutron dosemeters (IC2012n)

EURADOS was created to be a scientific network of European laboratories involved in research in radiation dosimetry. The objective is to advance the scientific understanding and the technical development of the dosimetry of ionising radiation by stimulating collaboration between European facilities.

Over the last decade EURADOS has coordinated a working group on Harmonisation of Individual monitoring in Europe (WG2) entrusting its members with a variety of tasks. With the aim of improving the harmonisation of individual monitoring and helping individual monitoring services (IMS) to comply with ISO Standard 17025, the subgroup 2 (WG2-SG2) was assigned the task of setting up a self sustained programme of personal dosemeter intercomparisons in Europe.

As a result of this work, EURADOS has successfully executed the EURADOS Intercomparisons 2008 and 2010 for whole body photon dosemeters, and the 2009 Intercomparison for extremity dosemeters. As a next step in the programme, Eurados now has the pleasure to announce the ***EURADOS Intercomparison 2012 for neutron dosemeters.***

www.eurados.org

SEIBERSDORF LABORATORIES

FREQUENTLY ASKED SOLUTIONS

Danke für Ihre Aufmerksamkeit

☺