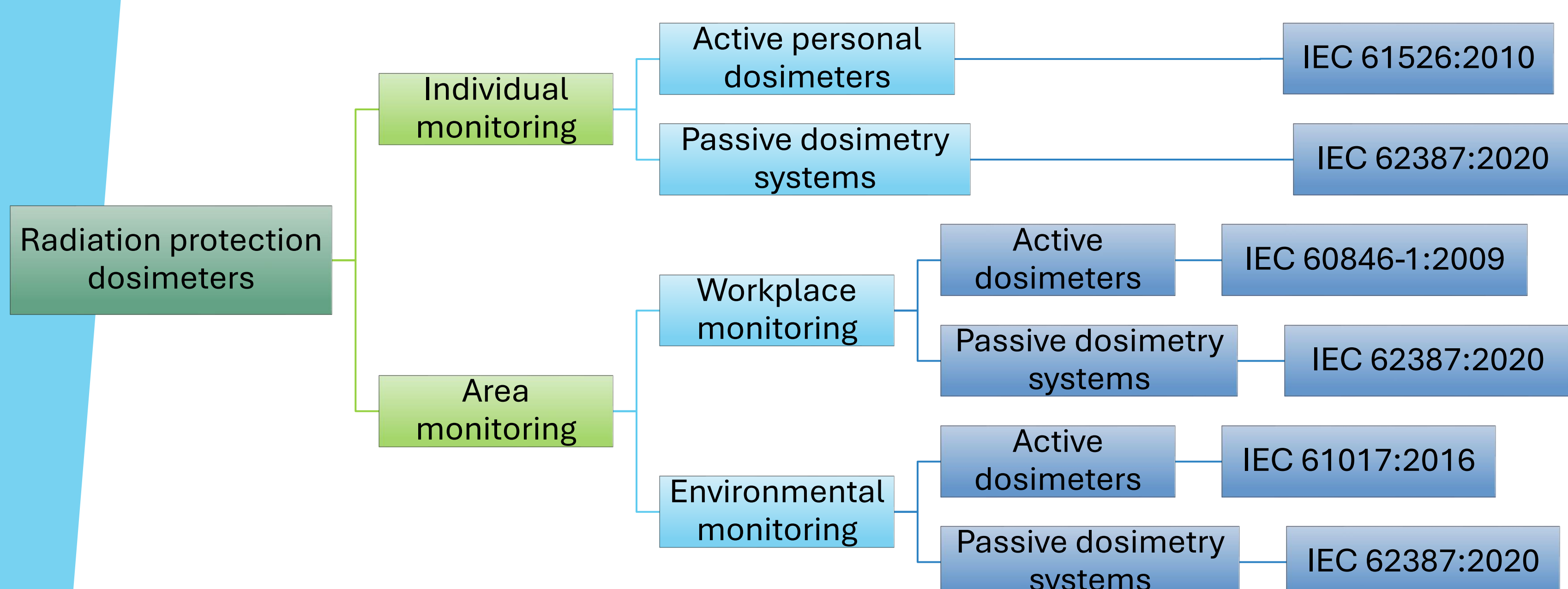


Harmonization of operational dosimetry quantity measurement in photon dosimetry within 22NRM07 GuideRadPROS Joint Research Project

RAP 24 – International Conference on Radiation Applications in Physics, Chemistry, Biology, Medical Sciences, Engineering and Environmental Sciences
10 – 12 June, University of Granada, Spain
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- ❖ Large variety of photon dosimeters used in radiation protection
- ❖ Measurement of operational dosimetry quantities – estimation of protection quantities
- ❖ Individual (Personal) monitoring / Area monitoring – various IR practices
- ❖ Different detector types



- ❖ Need for revision and update of IEC and ISO standards with respect to the new and upcoming technologies in radiation protection.
- ❖ ICRU report 95 proposed new operational quantities, the scale of the induced changes is not completely known.

WP1 - Validation of requirements and methods related to reference fields according to ISO 4037 and guide for spectrometry

- Evaluate current version of the ISO 4037:2019
- Test stated requirements for matched and characterized radiation fields
- Comparison of dosimetry and spectrometry for determination of conversion coefficients

WP2 - Training on requirements of ISO 4037 and calibration in reference fields

- Identification of actual training needs regarding implementation of ISO 4037
- Future changes due to ICRU 95 changes in operational dosimetry quantities
- Development of theoretical training material, practical training and e-learning material

WP3 - Harmonization and update of type testing standards

- Review existing type testing standards and legal requirements
- Overview of the existing RP dosimeters in use and current state of the art
- Harmonisation and update of type testing standards

WP4 - New technologies and quantities

- Assessment of future standardization needs related to new and upcoming technologies
- Impact of ICRU 95

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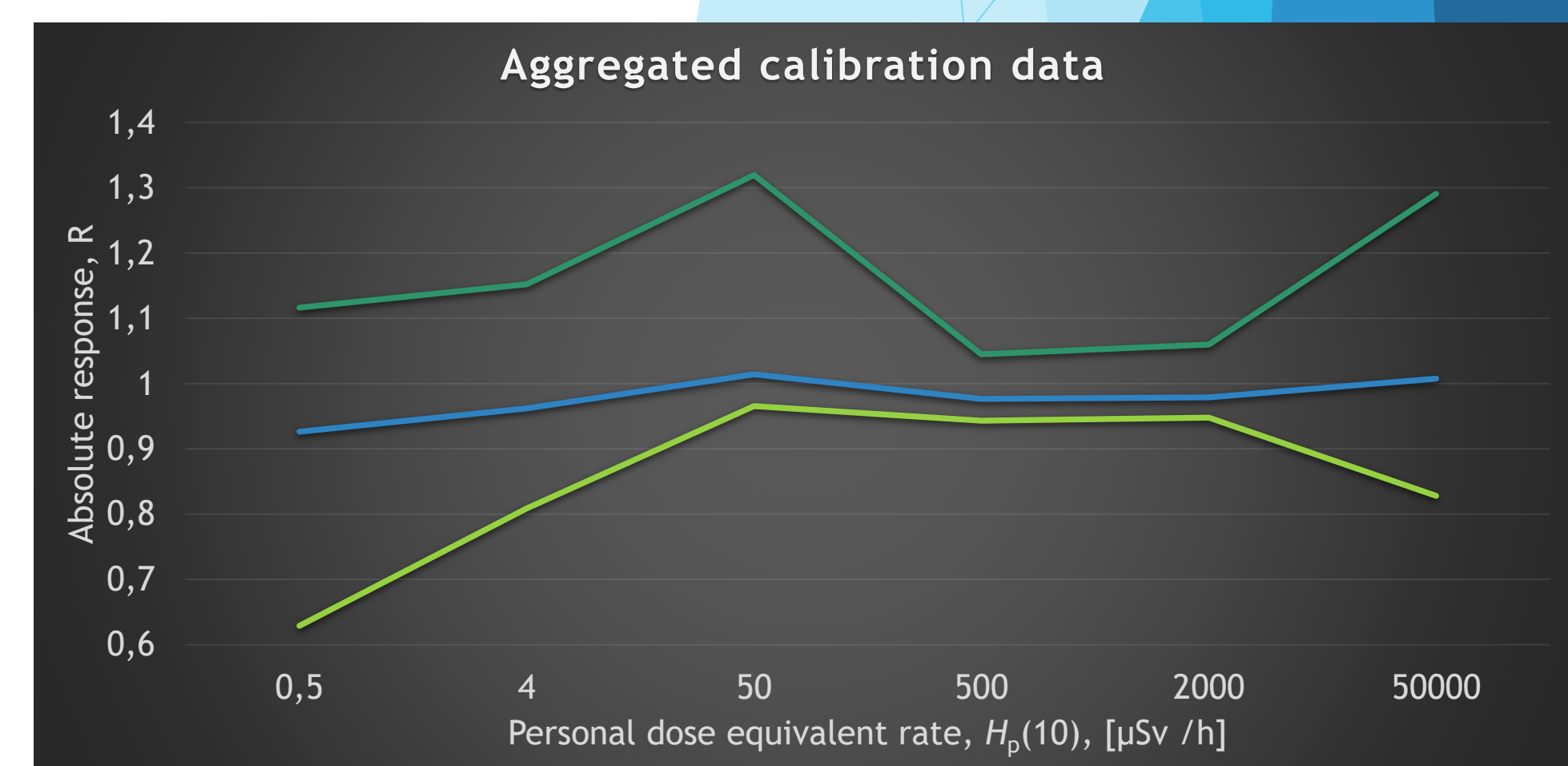
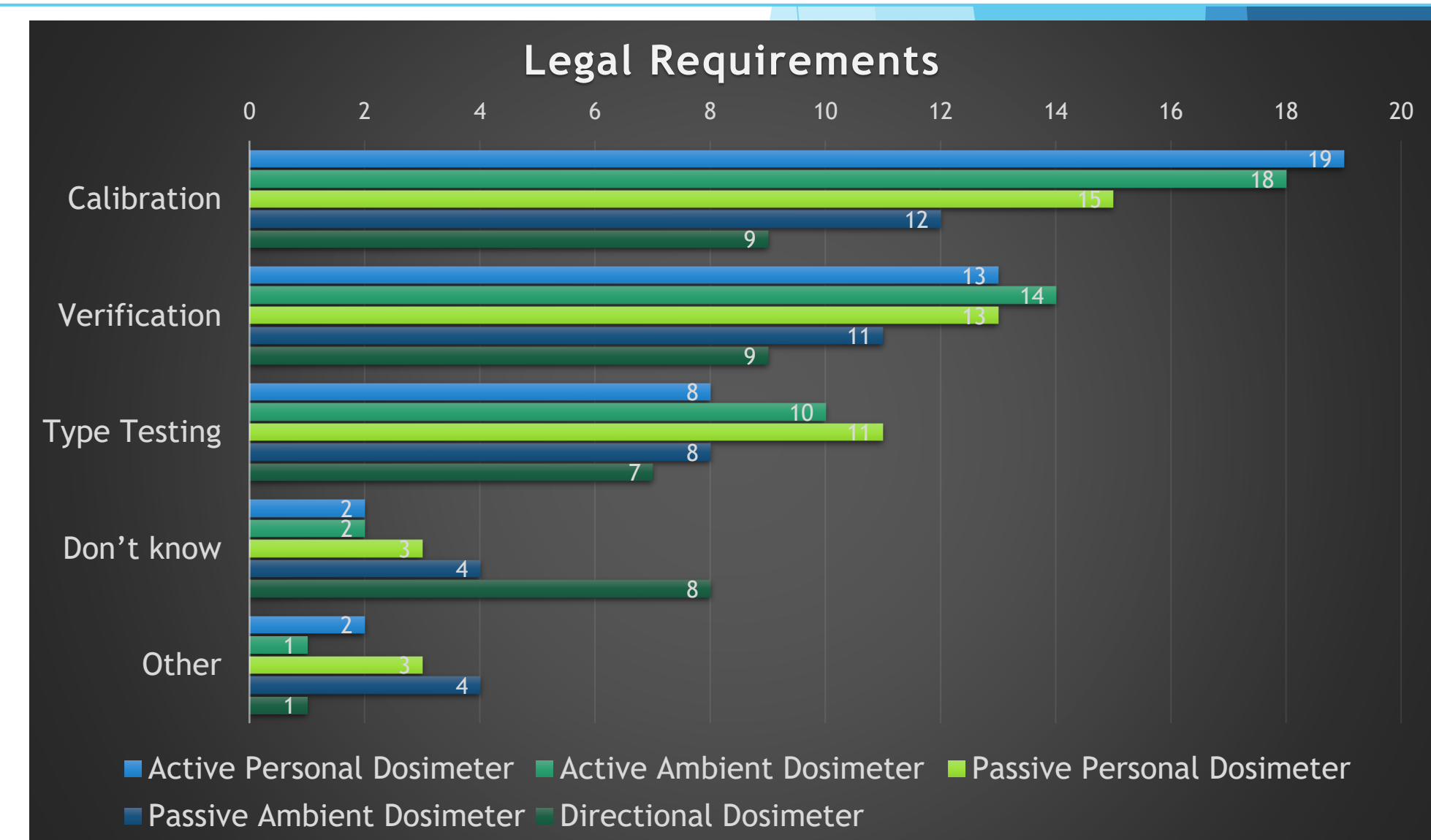
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International standard	Photon energy range, <i>E</i>	Dose (rate) range	Dosimeter	Application
IEC 61526:2010	80 keV - 1.5 MeV 20 keV - 150 keV	1 μSv - 10 Sv (1 μSv·h ⁻¹ - 1 Sv·h ⁻¹)	active	industrial medical
IEC 62387:2020	12 keV - 7 MeV, H(10) 8 keV - 1.25 MeV, H(0,07) 8 keV - 7 MeV, H(3)	0,01 mSv - 10 Sv	passive hybrid	individual workplace environment
IEC 60846-1:2009	12 keV - 10 MeV, H*(10) 8 keV - 250 keV H'(0.07)	0.01 μSv - 10 Sv 0,01 μSv/h - 10 Sv/h	active (portable)	workplace environment*
IEC 60846-2:2015	up to 10 MeV	1 mSv/h - 10 Sv/h up to 10 Sv	active (portable)	workplace (accident, post-accident)
IEC 60532:2010	50 keV - 7 MeV	N/A	active (installed)	workplace (NPP, NF safety)
IEC 61017:2016	50 keV - 7 MeV	30 nSv/h - 30 μSv/h 10 nSv - 10 mSv	active (portable/installed)	environment
IEC 62327:2017			active (portable) +identifiers	workplace

- ❖ Calibration and testing of RPDs in reference ISO 4037:2019 radiation fields
- ❖ X- (N, H, W, L) and γ- (S-Cs, S-Co) reference radiation fields
- ❖ Need for revision and update.

- ❖ Test methods and limits of variation for dosimeter response due to the effects of different influence quantities are defined in several IEC standards which are related to the specific operational quantity, dosimeter type and application of such dosimeter.

- ❖ Most common radiation-based tests → the influence of photon energy, angle of incidence and dose (rate) on the dosimeter response.



<http://projects.ciemat.es/web/guideradpros-euramet>

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