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Accredited proficiency testing and calibrations at the service of radiation protection

The Council Directive 2013/59/EURATOM[1] points out the importance of periodical calibrations, quality assurance as well as the recognition of radiation protection services and experts. Already in 2009, the RP 160[2] gave the basis for procedures and criteria for mutual recognition of approved dosimetry services in Europe. Nevertheless, in Italy, the European Directive has been implemented only in 2020[3], subsequently this recognition process has just started. Specifically, for radon measurement providers, some indications were given about the requirements for the service recognition, including the compliance with the ISO 17025[4] standard. In this context, the Laboratory of Radiation Metrology (LMR) of the Politecnico di Milano has organized its activities to offer accredited proficiency testing (PT) schemes, compliant with the standard ISO 17043[5] and calibration services for radiation protection practitioners.
The LMR hosts two calibration centers: the ionizing radiation laboratory (X and gamma beam facilities) and the radon laboratory.
The ionizing radiation laboratory, accredited since February 1999, performs calibrations using the reference radiation qualities specified in the ISO 4037-1[5] standard for the following dosimetry quantities: kerma in air, rate of kerma in air, equivalent personal dose, rate of equivalent personal dose, equivalent of environmental dose and rate of equivalent environmental dose.
The radon laboratory is equipped with a 2 m^3 radon chamber, built according to IEC 61577-4[6], that allows carrying out active instrument calibrations and exposures of passive devices. The radon laboratory was accredited in March 2021.
The increasing number of individual monitoring services (IMS) and radon monitoring services (RMS) demands not only for calibration facilities but also for proficiency testing providers (PTP).
Hence, to connect the calibration activity with the increasing request of inter-laboratory comparisons, the LMR undertook the ISO 17043 accreditation process to become a PTP both for external dosimetry and passive radon detectors. The accreditation for the personal and area dosimetry scheme was obtained in November 2021, and in 2022 the first accredited PT for extremities dosemeters is taking place.
Meanwhile, the pilot inter-laboratory comparison for radon passive devices started in summer 2021 and is expected to end in April 2022 with the publication of the final report. Consequently, in spring 2022, the LMR will be examined to get the accreditation extension also for this PT scheme.

[1] European Council. Council Directive 2013/59/Euratom (2013)
[2] European Commission. Radiation Protection 160. Technical recommendations for monitoring individuals occupationally exposed to external radiation. (2009)
[3] Italian Government. Legislative Decree 101. (2020)
[4] UNI CEI EN ISO/IEC 17025. General requirements for the competence of testing and calibration laboratories. (2018)
[5] UNI EN ISO 4037-1. Radiological protection. X and gamma reference radiation for calibrating dosemeters and doserate meters and for determining their response as a function of photon energy. Part 1: Radiation characteristics and production methods. (2021)
[6] UNI CEI EN ISO/IEC 17043. Conformity assessment. General requirements for proficiency testing. (2010)
[7] IEC 61577-4. Radiation protection instrumentation. Radon and radon decay product measuring instruments. Part 4: Equipment for the production of reference atmospheres containing radon isotopes and their decay products (STAR). (2009)

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