Contribution ID: **171** Type: **Poster**

Procedures for the ensuring the validity of results in the External Dosimetry Laboratory of Nicaragua

In Nicaragua, the External Dosimetry Laboratory (LDE) provides individual monitoring services and is located at the Radiation Physics and Metrology Laboratory (LAF-RAM). Between the end of 2017 and 2018, the quality management system based on the reference standard NTN-ISO/IEC17025:2017 was implemented at LAF-RAM where a procedure was developed for compliance with the technical requirements for ensuring the validity of the results [1]. The purpose of this work is to describe the procedure and the results of the activities intended for this process at LDE. The procedure LDE-PT-04 Procedure Ensuring the Validity of Results was elaborated which includes mechanisms for the review of reading parameters of the dosimetric system such as daily controls and trend analysis of reader sensitivity, reference light counts, dark counts, background and linearity verification. The data are plotted over time since 2017 and 2018 through control charts where the trend of fluctuations of the average values of the measurements between ±2 and ±3 standard deviations (σ) has been observed and checked for quarterly periods. Nevertheless, we have observed data considered as outliers caused by corrective and preventive maintenance of the equipment. The dosimetry system has been calibrated twice in the magnitude Hp(10) and H*(10) with traceability to IAEA Dosimetry Laboratory, Seibersdorf in May 2019 and in the magnitude Hp(10) and Hp(0.07) with the Laboratory of Metrology of Ionizing Radiations of the University of Pernambuco of Brazil in June 2021. The calibration of the system was verified by performing dose linearity of the dosimeters exposed as a function of a number of turns in a 90Y/90Sr tabletop irradiator. In all cases a linear proportionality was found with coefficients of determination R2 above of 0,95. The LDE has also participated in other processes such as Interlaboratories, and intercomparisons including EURADOS 2020 for photons and with the LAF-RAM Dosimetry Calibration Laboratory whose results according to the trumpet curve analysis described in ISO 14146: 2018 meet the requirements [2]. Regarding the final report of the test method, it was observed that the dosimetric information is maintained independently from the technical personnel involved, so it is considered that the reporting process and route is robust and independent. It is therefore concluded that this methodology for detecting deviations allows the continuous improvement of the service, the confidence of the clients and the competitiveness of the laboratory.

Speakers email

acastillos@unan.edu.ni

Speakers affiliation

Laboratorio de Física de Radiaciones y Metrología LAF-RAM, Universidad Nacional Autónoma de Nicaragua, Managua UNAN-MANAGUA

Name of Member State/Organization

Nicaragua

Primary authors: Mrs CASTILLO ARIAS, Andrea Marcela (Laboratorio de Fìsica de Radiaciones y Metrologìa LAF-RAM); Mrs ROAS ZÙNIGA, Norma Roas (Laboratorio de Fìsica de Radiaciones y Metrologìa (LAF-RAM), Universidad Nacional Autònoma de Nicaragua, Managua (UNAN-Managua)); Mr PÈREZ ZELEDÒN, Ricardo (Laboratorio de Fìsica de Radiaciones y Metrologìa (LAF-RAM), Universidad Nacional Autònoma de Nicaragua, Managua (UNAN-Managua)); Mrs MENDOZA COREA, Josselyn (Laboratorio de Fìsica de Radiaciones y Metrologìa (LAF-RAM), Universidad Nacional Autònoma de Nicaragua, Managua (UNAN-Managua))

Presenter: Mrs CASTILLO ARIAS, Andrea Marcela (Laboratorio de Fìsica de Radiaciones y Metrologìa LAF-RAM)

Session Classification: Session 10. Technical service providers in occupational radiation protection

Track Classification: 11. Technical service providers in occupational radiation protection