



Project Description for ARASIA TC Programme

TC Cycle 2020-2021

Project Number: RAS6095

Project Title: Establishing a Regional Network of Secondary Standards Dosimetry Laboratory Calibration, Quality Management System and Auditing (ARASIA).

Overall Objective: To improve availability and quality assurance for calibration services in the ARASIA region.

Project Duration: (2020 – 2021)

Project Description: Secondary Standards Dosimetry Laboratories (SSDLs) provide traceable calibrations of instruments used to measure the radiation doses in both medical and industrial applications. Over the last few years, several Cooperative Agreement for Arab States in Asia for Research, Development and Training related to Nuclear Science and Technology (ARASIA) State Parties have made plans for nuclear power plants for electricity production and research. In addition, some industrial applications are using neutrons in their daily practice. This requires the establishment of neutron level calibration laboratories in order to calibrate neutron detectors and personal dosimeters. On the other hand, it is very important to establish, maintain or upgrade the activities of SSDLs for diagnostic radiology levels in order to assist SSDLs in providing accurate calibrations to end users and supporting quality assurance programmes in hospitals. This project therefore aims to support ARASIA in maintaining SSDLs and establishing calibration services for diagnostic radiology and neutron levels. In this project, guidance for the SSDL quality audit will be prepared and regional experts identified. This will allow to perform quality audits for the SSDLs in the region. The guidance can also be used to evaluate the status of SSDLs and identify the gaps and areas for improvements. In addition, the establishment of the ARASIA collaboration SSDL network and dosimetry quality audit for SSDLs will be a very promising step towards offering the possibility to exchange available calibration capabilities and expertise between SSDLs of MSs..

Problem to be addressed: In the ARASIA region, there are several SSDLs providing gamma calibrations for radiation protection dosimeters. However, the need for calibration of dosimeters in the field of medical X ray imaging and the use of neutrons is increasing, and there are few calibration services available in the region. The quality of calibration services directly impact the accuracy of dosimetry measurements used for any field of use of radiation. SSDLs need regular external reviews to gain continuous improvement in quality. However, typically there is only one SSDL per country and it is difficult to find a national external expert in addition to a lack of SSDL specific guidance.



This project is proposed as a regional activity for the following reason(s): Based on the success of the technical cooperation (TC) project RAS6084 which was profitable for the ARASIA (training courses, scientific visits, expert meetings, etc.), with a total of 48 participants from all the ARASIA State Parties have attending three regional training courses (RTC) in the field of calibration for radiation protection dosimeters, quality management systems (QMS) and uncertainties. Also, three inter-comparison exercises were organized during this TC Project for the SSDLs and the personal dosimetry services. The RAS6084 TC project has succeeded in opening up communication channels between ARASIA State Parties. This project is a continuation of the previous project as many ARASIA State Parties SSDLs have needs and gaps concerning radiology and neutron level calibrations. Two Member States in the region have already designed their SSDLs to be equipped with neutron irradiators along with nuclear power plant (NPP) projects which are expected to be fully operational within the next five years. These laboratories can be used as reference laboratories for the region, and therefore fulfil the needs of other Member States in the region. Moreover, each SSDL in the region needs to be fully operational for diagnostic radiology to fulfil the needs of end users in the medical field. In addition, the established quality audit programme and pool of regional experts will help to define the gaps and support continuous improvement of the SSDLs. Therefore, this regional project will benefit the region and be useful to exchange experience and transfer knowledge between the SSDLs of ARASIA countries in the field of radiation dosimetry, calibration and quality management systems.

Stakeholders: Where appropriate, stakeholders will include (1) national SSDLs for the implementation of calibrations services, conducting the activities related to the project and establishing the SSDL network; (2) national regulatory bodies for establishing the needed legal documentations; (3) hospitals and medical radiology centres as well as research and education institutes; the detectors in the hospitals and the institutions related to them will be calibrated; and (4) industries for the neutron detectors and personal dosimeters to be calibrated.

Partnerships: Where appropriate, partnerships will be established with (1) national regulatory bodies; (2) national accreditation bodies; (3) national metrology institutes; (4) ministries of health; (5) research and education institutes; and (6) industries.

Role of nuclear technology: The project will include (1) radiation dosimetry and calibration techniques; and (2) quality management systems for radiation measurements and radiation dosimetry laboratories. The role of IAEA will be to support the project for the establishment or upgrade of MS SSDLs through hosting and/or organizing the project activities (regional training courses, scientific visits, expert meetings, etc.), and commit to communicate regularly to ensure that the project will meet its objectives. In this context, it should be mentioned that the role of the IAEA was indispensable for the success of the previous TC project RAS6084.