

Enhancement of National Regulatory Requirements for Occupational Radiation Protection based on Gap Analysis of International Standards and Challenges

PNRA Regulations on Radiation Protection-PAK/904 Rev.0 were issued in 2004 and were based on International Basic Safety Standards for Protection against Ionizing Radiation and for Safety of Radiation Sources (BSS-115). Regulations-PAK/904 describe the regulatory requirements for occupational radiation protection that are applicable to all nuclear and radiation facilities in Pakistan. The International Commission on Radiological Protection published the recommendations for radiation protection and safety of sources (ICRP 103) in 2007. Subsequently, the IAEA revised BSS-115 and published General Safety Requirements (GSR Part 3) in 2014. PNRA initiated the process of revision of PNRA Regulations -PAK/904, Rev-0 in 2016 on the basis GSR Part 3 and issued revised Regulation-PAK/904, Rev-1 in 2020. GSR Part 3 introduces the concept of three types of exposure situations i.e. planned, existing and emergency exposure situations [1] and GSR Part 3 classifies radon exposure into occupational and public exposure. According to UNSCEAR Report 2008, the world average dose due to background radiation is 2.4mSv that is mainly due to radon [2]. The ICRP 103 expresses reference level as activity i.e. 1500 Bq/m³ for workplaces and 600 Bq/m³ for homes [3], whereas, GSR Part 3 recommends the activity levels of 1000 Bq/m³ for an occupational exposure, and 300 Bq/m³ for the public exposure. The new and revised requirements in Regulations PAK-904 includes; establishment of dose constraints for occupational exposure, calibration of radiation monitors from authorized service providers, establishment of radiation protection program and control of occupational exposure in remediation of areas with residual radioactive material [4]. Moreover, the revised Regulations-PAK/904 also include new values of dose limits for the lens of eye (i.e. 20mSv/y) based on GSR Part 3 and ICRP publication 118 and values of reference levels for radon to control occupational exposure at workplaces.

This paper describes, evolution of the regulatory requirements on radiation protection during the last two decades, gap analysis of BSS-115 and GSR Part 3, revision process of PNRA Regulations-PAK/904 and includes discussion on challenges in implementation of new requirements for existing exposure situations (such as assessment of exposure due to radon at workplaces etc.).

REFERENCES

- [1] INTERNATIONAL ATOMIC ENERGY AGENCY, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014)
- [2] UNITED NATIONS, Effects of Ionizing Radiation. Vol. I: Report to the General Assembly, United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), UNSCEAR 2008 Report, New York.
- [3] INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION, The 2007 Recommendations of the International Commission on Radiological Protection, Publication 103, Elsevier (2007).
- [4] PAKISTAN NUCLEAR REGULATORY AUTHORITY, Regulations on Radiation Protection-PAK/904, Rev-0 and Rev-1 (2004 & 2020)

Speakers email

rana.nadeem@pnra.org, nadeempnra@gmail.com

Speakers affiliation

Pakistan Nuclear Regulatory Authority

Name of Member State/Organization

PAKISTAN/Pakistan Nuclear Regulatory Authority

Primary author: Mr NADEEM, MUHAMMAD (PAKISTAN NUCLEAR REGULATORY AUTHORITY)

Presenter: Mr NADEEM, MUHAMMAD (PAKISTAN NUCLEAR REGULATORY AUTHORITY)

Session Classification: Session 1. Review of standards and recommendations on occupational radiation protection at the international, regional, and national levels: Progress over the past twenty years and existing challenges

Track Classification: 1. Review of international standards and recommendations on occupational radiation protection, progress over the past twenty years and existing challenges