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MONITORING AND DOSE ASSESSMENT OF OCCUPATIONAL RADIATION EXPOSURE FOR ZIMBABWEAN WORKERS: A DECADE OF EXPERIENCE

In the past 10 years Zimbabwe has seen an increase in technology that uses radiation sources and related devices, and this has resulted in the need for a robust occupational radiation protection infrastructure. The Radiation Protection Authority of Zimbabwe (RPAZ) boasts of 2 state-of-the-art reader systems namely the Landauer Semi Manual InLight OSL (Optically Stimulated Luminescence) Reader and an automatic Harshaw 6600 Plus TLD (Thermoluminescent Dosimeter) reader. The TLD reader system uses the LiF (MgTi) crystal, TLD-100 and the OSL reader system uses Al2O3:C crystal, InLight OSL for external exposure monitoring of operational quantities Hp (10) and Hp (0.07). Both systems have an embedded algorithm for evaluation of doses.The regulator registered around 500 workers in the first year of individual monitoring work in 2011 and tremendously grew over the years with the current figure standing at 4000 plus registered workers. The register includes workers from the industrial, medical applications and research applications as shown in the table below.

Table 1: Number of workers registered for individual monitoring since 2011

Year	Number of Registered Workers		
	Industrial	Medical	Research
2011	519	102	7
2013	1553	753	27
2015	1806	1207	39
2017	1986	1353	42
2019	2043	1506	44
2021	2585	1570	51

The regulatory body has over time increased its efforts to ensure adequate occupational radiation protection requirements are in place for all users of radiation generating devices and equipment to provide assurance for health and safety for workers. The IAEA (International Atomic Energy Agency) has been offering immense support to the regulatory body individual monitoring laboratory quality assurance programmes through training and the Regional Intercomparison exercises which have been participated in since 2013 up to the year 2021. Since the gazetting of the NORM (Naturally Occurring Radioactive Material) regulations in 2011, a plan is in place for dose assessment for NORM workers using information from the ongoing baseline studies and characterization of NORM Industries. In line with that, RPAZ (Radiation Protection Authority of Zimbabwe) team started participating in trainings offered by the IAEA to map a way forward as far as worker protection is concerned for NORM industries and Radon exposure measurements and assessments.

In conclusion, because of the immense support from the government of Zimbabwe, the IAEA and other interested parties, the occupational radiation safety regime in Zimbabwe has improved in the past 10 years and is expected to be on an upward trend in the future ahead.

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