

Assessment of Occupational Radiation Dose Exposure in One of the Referral Hospitals in Kenya

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1. Background and Goal of the present work

In Regular monitoring of individual radiation exposure in workplaces is a key component of the health surveillance if radiation workers. It plays an important role in evaluation of effectiveness of a radiation protection management system. In Kenya, the regulatory framework requires a licencee to undertake individual monitoring of all radiation workers.

This referral hospital is the largest medical facility in East and Central Africa and also serves a s training facility. It has been providing personal monitoring services to its radiation workers for the las twenty years using LiF:Mg,Ti (TLD 100).

2. Materials, Equipment and Methods

2.1 Materials and Equipment

The dosimetry system in use comprises of Harshaw TLD 4500 (Harshaw Radiation Measurement Products, USA), which was a donation from the IAEA, and currently Harshaw TLD Model 8800 Plus Automatic Card reader which was purchased by the Government in 2018. The data used here was obtained from the facility's dose register.

Average dose for each company was determined, including assessing the monthly dose for each radiation worker and comparing with the recommendations by ICRP [2] and regulatory authority in Kenya.

2.2 Method

Assessment carried out in this study involved categorizing the workers into 5 groups, namely, radiographers, radiation therapy technicians, radiologists, oncologists and physicists. As of 2021, there was total of 124. The number of monitored workers in each category is described in figure 1.



Radiographers

- Radiation Therapy Technicians
- Radio logists
- Physicists
- Oncologists

Figure 1. Number of monitored workers in each category

4. Conclusions and Acknowledgements

The results of this study have demonstrated the effectiveness of radiation protection measures at the referral hospital. The dose results of the two years are below the limits set by the ICRP. However, the facility sums up the results for Hp (10) and Hp (0.07). There is a need for the facility to be reporting the results separetly. They also need to consider providing dosimeters for measuring extreme doses to radiation workers in the nuclear medicine department.

3. Results

3.1. Average Annual Effective Dose

There results of average effective dose for the various categories of radiation workers are represented in figure 2.



Figure 2. Average Annual Effective Dose

3.2. Maximum Individual Dose

Table 1. Maximum Individual Effective Dose

| Annual Individual Effective Dose (mSv) | |
|---|--|
| 2019/2020 | 2020/2021 |
| 2.64 | 1.76 |
| 18.05 | 1.52 |
| 1.86 | 1.79 |
| 1.14 | 1.08 |
| 1.88 | 1.49 |
| | Annual Individual E (mSv) 2019/2020 2.64 18.05 1.86 1.14 1.88 |