



# ATOMIC ENERGY COUNCIL

## DOSIMETRY SERVICES

### AT AEC

#### INTRODUCTION

The objective of radiation monitoring programme is to ensure that occupationally exposed radiation workers are aware of their absorbed doses and that doses do not exceed the regulatory limits as per schedule 3 of the Atomic Energy Regulations, 2012. AEC uses Thermoluminescent dosimeters (TLDs) for personal monitoring.

#### WHAT IS A TLD?

A thermoluminescent dosimeter (TLD) is a device used to measure and record the exposure of individuals to ionizing radiation outside the body (external dose). These badges are used by persons who are exposed to X-rays, gamma rays, beta rays, or a mixture of these types of radiation.



Fig1: A TLD card



Fig 2: TLD holder

#### WHY TLDs

1. TLDs are sensitive,
2. They are re-usable
3. Often more nearly tissue-equivalent,
4. Cover a wider range of doses,
5. Allow for measurement of deep and shallow doses,
6. Most TLD materials are less subject to fading

#### WHY PERSONNEL MONITORING?

1. To know the characteristic and magnitude of radiation one is exposed to.
2. To provide early or efficacious warnings to individuals who have been or are likely to be subject to over-exposure to ionising radiation.

#### TLD READING AT AEC

AEC uses an automatic TLD reader



Fig 3: Harshaw 6600 TLD reader at AEC

#### PAYMENT FOR TLDs

1. The charges for reading a badge is 0.5 currency point per card as per schedule 6 of the Atomic Energy Regulation, 2012. This charge is subject to revision from time to time (**1 currency point = UGX 20,000**)
2. Replacement Cost of Card shall be determined by the Council from time to time
3. All charges are paid in the bank (no cash received)

#### CONDITIONS WHEN ACCESSING DOSIMETRY SERVICE AT AEC

1. The Facility shall comply with the requirements of the Atomic Energy Act (AEA) No. 24 of 2008 and the Atomic Energy Regulations (AER), 2012 regarding Personal monitoring.
2. The facility shall investigate and report to AEC any instance that may result into high doses. (An effective dose of 20 mSv per year averaged over five consecutive years and An effective dose of 50 mSv in any single year;

3. The Facility shall pick and return immediately the loaned TLDs from the Atomic Energy Council at the expiry date of the wearing period.

4. The wearing period for the TLDs shall be three (3) months from the date of issue.

5. The Facility shall pay promptly the charges for reading the TLDs as stipulated by the Regulations. (0.5 Currency points per TLD card schedule 6 of AER, 2012)

6. The Facility shall pay for the lost or damaged TLDs an amount that will be determined by the Council from time to time (70 USD currently).

7. The Facility shall submit a list of its radiation workers when picking TLDs to Atomic Energy Council (AEC).

8. The issued TLDs shall be used in only one facility and the issued TLD per person is not transferrable.

9. The facility shall record the following on a daily basis; all patient imaging exposures including the type of exposure; the equipment setting for each exposure; the responsible person for each radiograph taken.

10. The Facility shall submit a report about the personal radiation monitoring annually to AEC.

11. The Atomic Energy Council may conduct announced or unannounced inspections at the premises of the facility to check on the use of TLDs.

12. It is the responsibility of the facility to take good care of the TLD badges.

13. Each facility shall document a radiation monitoring programme which shall be reviewed on annual basis. A copy shall be submitted to AEC.

14. The dosimetry records shall be kept and preserved at least until the worker attains or would have attained the age of seventy five years, and for not less than thirty years after the termination of the work involving occupational exposure

#### PRECAUTIONS TO BE TAKEN WHEN USING TLDs

1. Should be worn on the front between neck and hip
2. Must be firmly clipped to clothing
3. Should be worn by only one person for the period
4. Do not keep it where it may be exposed
5. Do not use when receiving own medical exposures
6. Should be kept in an area of low background radiation
7. Return TLDs promptly at the end of the wearing period for processing
8. Never intentionally expose the TLD
9. A lost TLD should be replaced immediately
10. Do not use the TLD in more than one facility

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