

Dosimetry Services at AEC

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Presentation Outline

- Introduction
- Dosimetry
- Regulatory Requirements
- Status of Monitoring
- Dosimetry at AEC
- Personal Radiation detectors

What is Dosimetry?

- Dosimetry means the science of measuring radiation doses;
- The dose is received by occupationally exposed radiation workers.

Why personnel monitoring at workplace?

- To know the characteristic and magnitude of radiation energy one is exposed to
- To evaluate the radiological hazard from the exposure received
- To evaluate the workload of a particular radiation worker
- To provide early or efficacious warnings to individuals who have been or are likely to be subject to over-exposure to ionising radiation.

Who do we monitor?

- We monitor occupationally exposed radiation workers.
- These are individuals who work in controlled areas.
- Receptionists, sweepers and nurses who do no work in Controlled areas are not monitored.

Mandate

- Dosimetry services are provided for by the Atomic Energy Act No. 24 of 2008 section 14.
- Council is mandated to run a dosimetry service for the purpose of:
 - ensuring that radiation measuring devices are worn by individuals who are occupationally exposed to radiation;
 - maintaining records and providing a reporting service by which it will maintain adequate records of all exposure measurements and provide to an authorized person and to the Council reports, at suitable intervals, of the information contained in those records;

Mandate Continued

- providing early or efficacious warnings to individuals who have been or are likely to be subject to over-exposure to ionising radiation



Regulatory requirements -Records

Regulation 34 (1)(b) AER, 2012;

An authorized person shall keep **RECORDS** of the results of monitoring and verification of compliance, which shall include **RADIATION DOSE RECORDS**

Regulation 54 (1), AER, 2012;

An authorised person shall keep and make available, as required, records of equipment calibration, **CLINICAL DOSIMETRY** and quality assurance, as well as any other necessary information to allow retrospective assessments of the doses received by patients.

Current status of monitored Persons and facilities

- A EC is currently monitoring 108 facilities in Uganda (27.7%).
- Majority of the monitored facilities are in Central.
- Total number of monitored radiation workers are 408.

Acquiring TLDs at AEC

- Fill in and submit the following:
 - ❖ Completed Application form for radiation monitoring service
 - ❖ List of radiation workers.
- Note:
 - The facility must be in possession of licence to possess and use a radiation source.

Wearing Badges

- The badges are issued on 3-monthly wearing period.
- The badges should be worn by the assigned radiation worker for that particular facility.
- Wear the badge at chest or waist level, and if a lead apron is used in an X-ray area, on the apron.
- Replace the badge in the rack at the end of each day - this should be in a low radiation background area.



Storage of TLD badges when not in use

- Badges must not be left in an area where it could receive a radiation exposure when not worn by the individual
- Store badges in a dark area with low radiation background.

Return of used cards for assessment

- Cards will be physically delivered to the Council.
- It is the responsibility of the institution to ensure that all cards are returned to the Council on time
- All cards that were issued for a specified wearing period should be returned to the Council even if they were not used.

Lost or damaged cards

- Badges are the property of the Council and are only loaned to the Facility.
- the facility shall be expected to pay a replacement charge for the badges damaged or lost (**120 US Dollars**)
- A used card will be considered “lost” if it is not returned to and received by the Council within thirty (30) days after the end of the wearing period

Reading TLDs at AEC

- Deliver the TLDs with a list of the wearers and their corresponding TLD number to the dosimetry department (C412)
- Pay for the reading services.
- Provide a copy of the pay slip to the accounts department for a receipt (C413)
- Present the receipt to the dosimetry department



Charges for reading Badges

- The services of the dosimetry are provided upon payment of a fee as stipulated in schedule 6 for fees and charges (**0.5 currency point per card**)
- 1 currency point is equivalent to 20,000UGx
- **Details for payments:**
- Payments may be by Cash, EFT or Cheque using the details below:

Bank: Barclays Bank (U) Ltd, Kampala Road Branch

A/C Title/name: Atomic Energy Council

A/C No.: 6003621039

Swift Code: BARCUGKX

Dose reports

- AEC issues 3-monthly report to the facility which has fully paid the dosimetry fee.
- Doses are reported in mSv.
- Doses above investigation levels will be printed in bold.
- The investigation levels are 0.5 mSv for Hp (10) and Hp (0.07).

Dose reports

- TELEPHONE:** 0414-696333
GENERAL LINE: 0485-660639
FAX: 041425342
E-MAIL: SECRETARY@ATOMICCOUNCIL.GO.UG
WEBSITE: WWW.ATOMICCOUNCIL.GO.UG
 AEC/TEC/DR-26/01



ATOMIC ENERGY COUNCIL
PLOT 29/33, AMBER HOUSE
KAMPALA ROAD

P. O. BOX 7044,
KAMPALA

RE: PERSONAL RADIATION MONITORING REPORT FOR MR xxxxxxxxxx FOR THE PERIOD Y-Z MONTHS

S/n.	NAME OF RADIATION WORKER	CARD NUMBER	DOSE READINGS	
			Hp (0.07) mSv	Hp (10) mSv
1.	xxxxxxxxxxx	a1000504t	0.0359	0.0317

Readings show that all personal exposure doses are low and within regulatory limits of mSv for Y-Z months (20 mSv per year) for occupational exposed workers.

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Secretary & Chief Executive Officer, Atomic Energy Council

Interpretation of AEC dose results

- $H_p(0.07)$ - Eye lens dose
- $H_p(10)$ -Depth dose
The depth dose $H_p(10)$ is the dose equivalent at a body depth of 10 mm at the point of application of the personal dosimeter.

Radiation Detectors

- Radiation is detected by measuring the amount or number of ionizing or excitation events that occur.
- They can either be active radiation detectors e.g. portable radiation survey meters. However these are impractical to avail each worker with one.
- Passive radiation detector. Measure total dose and must be read out at specialized processing facilities/ laboratories;

Sample of Radiation detectors



TLD Dosimeters

- Personal dosimeters are normally passive dosimeters e.g. TLD
- Active dosimeters are usually applied to pregnant workers and in case of accidents
- A dosimeter cannot stop you from receiving radiation exposures



Electronic Personal Dosimeters (EPDs)

Electronic Personal Dosimeters (EPDs) are small electronic dosimeters that use a battery to power a detector to measure the accumulated dose. These devices are widely used in industrial and medical applications. They can include a dose rate function and an alarm for pre-determined radiation dose rates.



Why TLD Dosimeters?

- Need to know the radiation dose to every individual radiation worker
- They can be used to measure the effective doses received by persons exposed to external ionizing radiation.
- They are cheap and readily available to get.
- They can store the radiation energy.
- Can be used to assess actual exposure during work or a check against unplanned exposures

**Thanks for
Listening!!**