



Personnel Monitoring Programs

Radiation Safety Training

Module 5

- This module will discuss the various types of personnel monitoring devices and the employee's responsibilities.

Personnel Monitoring Overview

- External radiation dose results from exposure to radioactive materials or radiation producing machines outside of the body.
- A “personal dosimeter” is a device used to measure external dose.
- Internal radiation dose comes from radioactive material within the body. The whole body counter, chest counter, and bioassay sampling are methods for measuring internal dose.
- Personnel monitoring for radiation dose involves assessing exposure due to external and internal sources.

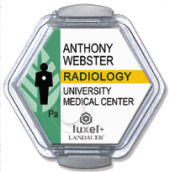
Introduction

- **External Dosimetry**
A personal dosimeter is a device used to measure external radiation dose. Different types of external dosimeters may be used. The Radiation Safety Officer determines which type is needed.
- The following information identifies the different types of dosimetry currently used at Western Kentucky University.

External Dosimetry

- Applied Physics Institute

- Luxel + OSL whole body dosimeter



- Assigned to all individuals using/operating radioactive materials/radiation producing machines. These dosimeters are sensitive to beta, gamma, x-ray, and neutron radiations. These are also used as quarterly area monitors to help determine compliance with the public dose limit.

- TLD ring dosimeter



- Assigned to individuals conducting XRD beam alignments and placing samples for analysis. These dosimeters are sensitive to x-rays, beta, and gamma rays.

- Bubble Technologies Neutron Bubble Dosimeter

- Given to visitors who are in need of temporary neutron exposure monitoring.



- Dosimeter Corporation Pocket Dosimeter

- Give to visitors who are in need of temporary monitoring of x-ray, beta and gamma ray exposure.



Dosimetry at WKU

- WKU Health Services



- Luxel + OSL whole body dosimeter
 - Assigned to radiological staff operating the diagnostic radiographic x-ray equipment

- ICSET

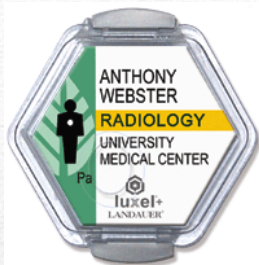
- TLD ring dosimeter



- Assigned to individuals placing samples in the XRD for analysis. These dosimeters are sensitive to x-rays, beta, and gamma rays.

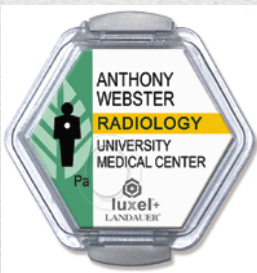
Dosimetry at WKU

- Dental Hygiene Clinic



- Luxel + OSL whole body dosimeter
 - Assigned to all Dental Hygiene students and staff working in the Clinic and using the intra-oral x-ray units and/or the panoramic x-ray unit.

- Radiation Safety Officer



- Luxel + OSL whole body dosimeter
 - Sensitive to x-ray, gamma, beta, and neutron radiations. The RSO also has a Luxel + OSL wrist dosimeter worn during sealed source leak testing.

Dosimetry at WKU

- Biotechnology Center

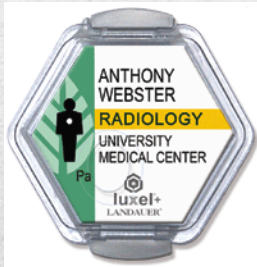


- Luxel + OSL whole body dosimeter

- Assigned to individuals working with the high energy beta emitter P-32.

- Mobile Health and Dental Units

- Luxel + OSL whole body dosimeter



- Assigned to individuals operating the intra-oral dental x-ray equipment.

Dosimetry at WKU

- Wear dosimeters when required.
- Wear dosimeters properly.
 - Whole body dosimeters should be worn on the chest area. This area is on or between the neck and the waist.
- Store the dosimeter in the proper storage location along with the Control dosimeter.
- Do not wear the dosimeter for non-occupational purposes.
- Report lost dosimetry to the RSO immediately so that replacement dosimetry can be ordered.
- Do not tamper with or intentionally exposure another person's dosimeter.

Employee Responsibilities

- Kentucky regulations require dosimetry for
 - Individuals likely to receive dose in excess of 10% of the occupational limits
 - Minors and declared pregnant workers likely to receive dose in excess of 10% of regulated limits
- WKU often utilizes dosimetry even when not required by regulation
- To request dosimetry fill out the dosimetry request form at <http://www.wku.edu/ehs/radiation/>. The RSO will order dosimetry after your completion of radiation training and upon receipt of this completed form.

Dosimetry Requirements

- Dosimetry is issued and picked up monthly by the RSO, except for dosimetry issued to dental x-ray users and for some dosimetry issued as area monitors.
- If you know of any factors which may effect your exposure reading notify RSO in writing.
 - Examples include physical damage to the dosimeter, accidental wearing of dosimeter during non-occupational exposure to diagnostic x-rays or radioactive material

Dosimetry Processing

- **Internal Monitoring**
 - Most activities at WKU do not require routine internal monitoring.
 - Whole body counters, chest counters, and/or bioassay samples may be used to monitor radioactive material in the human body. In some cases, the locations of radioactive material may be determined. An internal dose estimate may be performed based on these measurements.
 - The type of internal monitoring performed will be determined on a case-by-case basis and depends on the quantity and form of the radioactive material used.

Internal Monitoring

- The RSO issues written annual dose reports to all employees issued dosimetry.
- An employee may make a written request for a copy of his/her dose report at any time.
- Dosimetry records are considered private medical records and will be treated as confidential.

Methods for Obtaining Radiation Dose Records