



Dosimetry

Dosimetry tracks exposures and monitors external radiation exposures. It is used to ensure that the principles of ALARA, keeping exposures as low as reasonably achievable, are followed. The Radiation Safety Officer (RSO) coordinates the dosimetry program and monitors radioactive material users. Dosimetry results are available from the RSO.

All radioactive material users and others occupying radioactive material use areas wear radiation dosimetry. In most cases, dosimetry is issued quarterly. It is important to wear your dosimetry badges/rings when in the laboratory. Store your badges and rings away from sources of radiation and sources of heat.

It is important to remember that dosimetry only measures external radiation exposure and offers no protection from radiation.

Whole Body Dosimeter

The whole body dosimeter can measure gamma/x-ray exposures down to 1 mrem and beta exposures down to 10 mrem.



Ring Dosimeter

Ring dosimeters measure exposures to your extremities and skin. The ring is designed to wear inside disposable gloves, and comes in a range of sizes (S, M, L, and XL). The ring can measure 30 mrem to 1,000 rad for gamma/x-rays and 40 mrem to 1,000 rad for betas.



When to wear dosimetry?

Wear a dosimeter at all times when working with or around radiation sources. This means you need to wear your dosimeter when you are working with radioactive materials or are in an area where work is performed with radionuclides or radioactive waste storage areas. Do not wear someone else's dosimeter. Notify EHS if your badge or ring has been damaged or lost; a replacement badge or ring can generally be provided within 24 hours of your request.

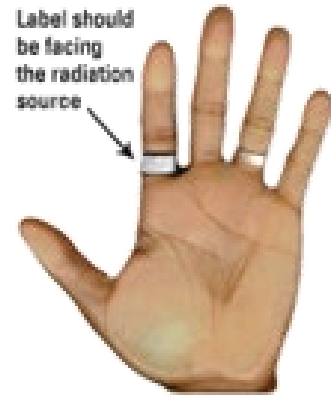
Where to wear dosimetry?

Your whole body dosimeter should be worn on your torso, name tag facing toward the source of radiation, and positioned so that it is closest to the source of radiation. Wearing it on your chest or at bench level are two suitable locations. It can be worn



inside or outside your lab coat. If you wear it outside, use caution to prevent contamination.

Wear your ring dosimeter on the hand you use most often to handle radioactive materials, with the text side facing the inside of your palm.



How does my dosimeter work?

Whole Body Dosimeter: measures radiation exposure due to x-ray, beta, and gamma radiation through a thin layer of aluminum oxide and different filters. The dosimeter is enclosed in a water-resistant blister pack. After use, the RSO or delegate returns them to the manufacturer for processing, where the aluminum oxide is stimulated with a blue-laser causing it to become luminescent. This luminescence is proportional to the amount of the radiation exposed to the dosimeter during use. This luminescence is measured and a report of the exposure results is generated.

Ring Dosimeter: measures radiation exposure to your extremities due to x-ray, beta, and gamma radiation with an encased radiation-sensitive lithium fluoride chip. The chip is sealed beneath the identification cover of the ring. After use, the RSO or delegate returns them to manufacturer, where the chip is removed and carefully heated causing the chip to become luminescent. The luminescence is proportional to the amount of radiation exposure during use.

Dosimeter Exchange

Most dosimeters (Whole Body and Finger Ring) are issued for three months. A new dosimeter should arrive by the first months of each quarter (January, April, July, and October). Dosimeters are generally exchanged a day or two before the start of each quarter. Exchange old whole body dosimeters with the new one by snapping the dosimeter out of the white plastic holder. Dosimeters should be left on the dosimeter rack, or designated location approved by EHS, to expedite the exchange process each quarter.



Wearing a dosimeter is a serious matter, as it can reflect on your lifetime recorded dose. Therefore, it is important for the RSO to be able to account for any missing or damaged badges.

Revised: 12/2018, 02/2022