
PERSONNEL DOSIMETRY

1.0 PURPOSE

To provide guidelines for the issuance and use of radiation monitoring dosimeters at the Georgia Institute of Technology (Georgia Tech).

2.0 SCOPE

This procedure is applicable to all Radiation Workers working under an approved Georgia Tech Form A (RS-004a or RS-019a).

3.0 RESPONSIBILITIES

3.1 The Radiation Safety Officer or designee (RSO) shall determine what type(s) of dosimetry, if any, will be issued to a Radiation Worker who will be working with radioactive materials (RAM) or a radiation machine.

3.2 The RSO shall approve any modifications to the implementation of this procedure.

3.3 The Office of Radiological Safety (ORS) shall provide permanent dosimetry.

3.4 The Authorized User (AU) shall provide supplemental dosimetry.

3.5 The Radiation Worker issued dosimetry shall wear the dosimeter(s) according to the specifications of section 7.0 of this procedure.

4.0 REFERENCES/REQUIREMENTS

4.1 Requirements and Specifications

4.1.1 Georgia Tech Radiation Safety Policy Manual

4.1.2 State of Georgia Rules and Regulations for X-ray, OCGA 111-8-90

4.1.3 State of Georgia Rules and Regulations for Radioactive Materials, OCGA 391-3-17

4.1.4 ANSI/HPS N43.3-2008, For General Radiation Safety-Installations Using Non-Medical X-Ray and Sealed Gamma-Ray Sources, Energies up to 10 MeV

4.2 Related Procedures

4.2.1 Procedure 9306, Preparation & Maintenance of Radiation Work Permits (RWP)

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4.2.2 Procedure 9310, Posting of Radiological Control Areas and Materials

4.2.3 Procedure 9501, Control and Accountability of Radioactive Materials

4.2.4 Procedure 9502, Control and Accountability of Radiation Generating Equipment

5.0 **GENERAL INFORMATION**

5.1 A dosimeter is a device (i.e., film badge, optically stimulated luminescence dosimeter, thermo-luminescent dosimeter, supplemental dosimeter) designed to be worn by an individual for the purpose of measuring and recording occupational radiation dose.

5.2 The dosimeter shall have an energy detection range that is as close as possible to the photon, beta, and neutron energies to which the individual may be exposed.

5.3 Processor Requirements for Permanent Dosimetry

5.3.1 The processor shall hold current National Voluntary Laboratory Accreditation Program (NVLAP) accreditation for personnel dosimetry for the type of radiation of concern.

5.3.2 The results shall be maintained on appropriate forms to show the individual's current and cumulative dose.

6.0 **ISSUANCE OF DOSIMETRY**

6.1 Permanent Dosimetry

6.1.1 Dosimetry issued at Georgia Tech is provided by a third-party vendor. Dosimetry sensitive to photons, beta particles, and neutrons is available.

6.1.2 Dosimetry shall be issued to a Radiation Worker that meets at least one of the following criteria:

6.1.2.1 As evaluated by the RSO, is likely to receive in excess of the limits specified in OCGA 391-3-17-.03(8)(b)

6.1.2.2 Enters a High Radiation Area or Very High Radiation Area

6.1.3 Dosimetry should be issued to a Radiation Worker that meets at least one of the following criteria:

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- 6.1.3.1 As evaluated by the RSO, is likely to receive in excess of 10% of the Georgia Tech ALARA levels
- 6.1.3.2 Is a minor
- 6.1.3.3 Has declared a pregnancy
- 6.1.3.4 Has been granted unescorted access to the Radiological Science and Engineering Laboratory
- 6.1.3.5 Handles RAM that may result in an elevated extremity dose (e.g., user that pipettes high energy beta emitter like P-32)
- 6.1.3.6 Handles or works near a neutron source
- 6.1.3.7 Operates or works near a radiation machine where radiation above background is measurable
- 6.1.3.8 Requests it after consultation with the RSO
- 6.1.4 Exchange Frequency
 - 6.1.4.1 The default exchange frequency for permanent dosimetry is quarterly.
 - 6.1.4.2 Permanent dosimetry issued to minors and declared pregnant workers is exchanged monthly.
 - 6.1.4.3 Dosimeters in use during an incident may be returned for processing immediately.
 - 6.1.4.4 The RSO will determine the exchange frequency if different from those in 6.1.4.1 and 6.1.4.2.
- 6.2 Supplemental Dosimetry
 - 6.2.1 A supplemental dosimeter shall be used by a Radiation Worker working under a Radiation Work Permit that requires its use.
 - 6.2.2 A supplemental dosimeter should be used when an immediate estimate of the dose received is desired, such as during work in a High Radiation Area.

Examples: Electronic Personal Dosimeter (EPD), Pocket Ionization Chamber (PIC)

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- 6.2.3 When both a permanent dosimeter and a supplemental dosimeter are worn, the reading from the permanent dosimeter will be the dose of record for the Worker.

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7.0 CARE AND USE

- 7.1 Dosimeters issued by ORS are only to be used for measuring a Radiation Worker's radiation exposure from their work at Georgia Tech. That is, they are not to be used for measuring personal non-occupational exposures (e.g., during medical procedures or air travel).
- 7.2 The dosimeter shall be stored in a low background location away from the radiation source.
- 7.3 The dosimeter shall be stored out of extreme heat (car in summer or in a dryer) and otherwise protected from damage.
- 7.4 Dosimeters shall be worn at all times during the use of RAM or a radiation machine.
- 7.5 The whole body dosimeter shall be worn between the neck and waist at a location that will receive the highest exposure.
- NOTE: If wearing a lead apron, the whole body dosimeter shall be worn on the outside of the apron at the collar level.
- 7.6 The ring dosimeter shall be worn on the hand likely to receive the highest dose, with the ring's label facing the source. When worn with gloves, the ring shall be inside the innermost gloves.
- 7.7 The fetal dosimeter shall be worn over the abdomen of the declared pregnant worker.
- 7.8 Consult the RSO for the location of a dosimeter meant for monitoring other parts of the body.
- 7.9 The Radiation Worker shall notify ORS immediately if dosimetry has been lost or damaged. ORS maintains spare dosimetry and can issue a replacement.

8.0 RECORDS

- 8.1 All records generated as a result of implementation of this procedure shall be maintained as permanent records of Georgia Tech.
- 8.2 These records shall include dosimetry results and calculated results, and shall be kept confidential.

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- 8.3 Dose records shall be mailed annually to the individual utilizing an NRC Form 5 or equivalent. Individuals may request to view their own dose record at any time.
- 8.4 If an organization requests the dosimetry record of a current or former Radiation Worker, Georgia Tech shall provide this record only after receiving a copy of the request containing the signature of the Radiation Worker giving permission for Georgia Tech to release the record to that organization.
- 8.5 If a Radiation Worker is issued dosimetry and that Radiation Worker has been monitored for radiation dose at another organization(s), ORS shall attempt to obtain the Radiation Worker's prior dose history by sending the other organization(s) a Form RS-114, Request for Previous Occupational Radiation Exposure.
- 8.5.1 A copy of this Request shall be kept in the Personnel File.
- 8.5.2 For any exposure within the current calendar year, the Radiation Worker's Annual limit will then be reduced by the amount received at the other organizations.