Assurance of Public and Worker Safety

**POLICY**

The University and all participants in the University Radiation Protection Program strive to maintain safety at all campuses and facilities. All participants work to minimize the risk of injury or illness to employees, students, and the public.

**PURPOSE**

The purpose of this policy is to ensure the safety of all guests and visitors to the University and all workers who may encounter sources of radiation in the workplace.

All participants in the Radiation Protection Program are to strive toward the same goal of meeting or exceeding required and voluntary environmental, health, and safety regulations and policies.

**PROCEDURES**

The following procedures are designed to ensure the proper maintenance of this policy.

**Radiation Worker Application for Dosimetry**

In order to request approval to be a radiation worker at the University, the individual must meet the following conditions or requirements:

- Submit the following forms to the Radiation Safety Office (RSO), as indicated. (See the RSO website):
  - Application to be a Radiation Worker
  - Radiation Exposure History Release form (only required if the applicant has been in a dosimetry program under another licensed, non-WSU employer as a radiation worker in the prior 12 months).

- Successfully complete required RSO-provided online basic radiation safety training in a timely manner (at the time of application or within the two years prior to the application date).

- Receive approval and agreement of a sponsoring authorized user who is to supervise the individual's work with radiation.

When the RSO confirms the receipt of all required documents and the satisfactory completion of required training, the RSO notifies the individual and the authorized user that the applicant is approved to be a radiation worker.
Assurance of Public and Worker Safety

Assignment of Dosimetry Device

The assignment of a dosimetry device is based upon the individual's risk to receive an occupational exposure equal to or above ten percent of their allowed regulatory limit.

- If the information provided in the application or provided to the RSO by the authorized user indicates that the individual is likely to be at risk, the RSO assigns the worker appropriate dosimetry.

- If the risk assessment shows very low potential for exposure, the RSO assigns a radiation worker ID tag to the worker.

**NOTE:** Each worker is to wear either their assigned whole body dosimetry or radiation worker ID tag whenever in a radiation-use area at the University. The worker must notify the RSO if their use of radiation is changing significantly so that follow-up risk assessments and updating of dosimetry assignment can be done.

Nonradiation Worker Hazard Awareness Training

Authorized users and laboratory supervisors are to make sure that all nonradiation worker individuals who are allowed entry into a University restricted radiation use area are provided with appropriate hazard awareness training. Individuals who require hazard awareness training prior to being allowed unescorted entry into a radiation area include:

- Students and staff who are not radiation workers
- Custodians and maintenance personnel
- Visitors and guests

Radiation Safety Training for Radiation Workers

Radiation Safety Office-Provided Basic Radiation Safety Training

All individuals who are planning to become radiation workers must complete RSO-provided basic radiation safety training. (See the Training link on the RSO webpage.) The training must be completed prior to beginning any work with radiation and updated, as needed, to ensure the worker maintains basic safety knowledge appropriate to their area of use.

The RSO provides a selection of online training modules for users of radioactive materials and radiation generating devices and machines.

The RSO tracks completion of all online radiation safety training modules as each module quiz is successfully completed and submitted.
Assurance of Public and Worker Safety

Authorized User-Provided Hazard Awareness and Use-Specific Training

Authorized user-provided hazard awareness and use-specific training is provided on an ongoing basis to radiation workers and all ancillary support personnel (staff and students) who frequent University radiation use areas.

Each authorized user must ensure that workers under their authorization receive instruction on techniques and protocols related to the specific radionuclides and hazards in the facility.

No radiation worker may operate an x-ray generating device or particle accelerator unless they receive training regarding:

- The operation of the specific machine.
- All fail-safe devices associated with the machine's use.
- All emergency procedures.

The authorized user must document such training in a training log. The log is to be maintained at the radiation use facility.

Radiation Worker Exposure Tracking

External Exposure Monitoring

The University provides external dosimetry to radiation workers who are at risk to receive a radiation dose from external sources in excess of ten percent of the applicable yearly occupational dose limit. The current regulatory limits are:

- Total effective dose equivalent = 5,000 mrem
- Lens of the eye = 15,000 mrem
- All other organs including skin and extremities = 50,000 mrem
- Declared pregnant worker = 500 mrem/gestation
- Minors = 500 mrem

See the Radiation Protection Program Manual (RPPM) for details, at:

rso.wsu.edu/rppm/

External Exposure Investigational Levels

The Radiation Safety Committee sets the external dosimeter reading (exposure level) that requires the RSO to investigate the cause of an occupational radiation dose to a University radiation worker.

Breach of ALARA

If the "triggered" exposure reading is found to be due to a breach of ALARA that the worker, authorized user, or the RSO can quickly correct, the appropriate corrective action is put in place.
Assurance of Public and Worker Safety

Breach of ALARA (cont.)
The RSO then monitors to confirm resolution of the risk of unnecessary radiation exposure to the radiation worker.

Internal Intake Exposure Monitoring
If the source of radiation is an unsealed (dispersible) form of radioactive material, there is potential for internal intake by a worker that could result in localization of radionuclides within the body.

See the RPPM for details regarding Bioassay Program requirements.

Radiation Worker
A radiation worker who is at risk for internal intake may be required to participate in a bioassay program, under the supervision of the RSO. A worker must participate in the bioassay program if they experience either of the following:

- An intake in one year that is in excess of ten percent of the applicable annual limit of intake (ALI) of a specific radionuclide.

- A cumulative dose from a combination of internal and external exposures in excess of the radionuclides' allowed combined total exposure (Total Effective Dose Equivalent).

Pregnant Worker or Minor
A declared pregnant radiation worker or an approved radiation worker who is a minor (less than 18 years old) has lower annual exposure limits. The RSO notifies such workers of the applicable exposure limits at the time they are approved to be radiation workers. The RSO monitors monthly exposure to ensure safety is maintained.

For a declared pregnant worker or a minor, the bioassay requirement applies if they are likely to exceed one percent of the applicable annual limit on intake.

Internal Exposure Investigational Levels
If at any time an internal intake is detected, the RSO makes and documents an estimate of the internal radiation exposure in the individual's exposure monitoring record and monitors all future exposures at the University.

If appropriate, the worker's radiation use is suspended or terminated to eliminate the risk of further internal intake.

Radiation Worker Exposure Records
The RSO maintains complete and accurate personnel exposure records for radiation workers documenting the cumulative dose received from external and internal occupational radiation exposures, as required by regulation. The RSO manages such records as confidential medical information. The RSO provides a copy of the exposure report to the radiation worker upon request.