

ALARA PROGRAM  
Dr. Gottum

1. Management Commitment

a. We, the management of this medical facility are committed to the program described herein for keeping individual and collective doses as low as is reasonably achievable (ALARA). In accord with this commitment, we hereby describe an administrative organization for radiation safety and will develop the necessary written policy, procedures, and instructions to foster the ALARA concept within our institution. The organization will include a Radiation Safety Officer (RSO).

b. We will perform a review of the radiation safety program, including ALARA considerations. This will include reviews of operating procedures and past dose records, inspections, etc., and consultations with the radiation safety staff or outside consultants.

c. Modifications to operating and maintenance procedures and to equipment and facilities will be made if they will reduce exposures unless the cost, in our judgment, is considered to be unjustified. We will be able to demonstrate, if necessary, that improvements have been sought, that modifications have been considered, and that they have been implemented when reasonable. If modifications have been recommended but not implemented, we will be prepared to describe the reasons for not implementing them.

d. In addition to maintaining doses to individuals as far below the limits as is reasonably achievable, the sum of the doses received by all exposed individuals will also be maintained at the lowest practicable level. It would not be desirable, for example, to hold the highest-doses to individuals to some fraction of the applicable limit if this involved exposing additional people and significantly increasing the sum of radiation doses received by all involved individuals.

2. Radiation Safety Committee is not required for this facility.

Investigational Levels  
(mrems per calendar quarter)

Level I, Level II

1. Whole body; head and trunk; active blood-forming organs; lens of eyes; or gonads	125,	375
2. Hands and forearms; feet and ankles	1875,	5625
3. Skin of whole body*	750,	2250

\*Not normally applicable to medical use operations except those using significant quantities of beta-emitting isotopes.,

### 3. Radiation Safety Officer

#### a. Annual and Quarterly Review

(1) Annual review of the radiation safety program. The RSO or designate will perform a review of the radiation safety program for adherence to ALARA concepts. Reviews of specific methods of use may be conducted on a more frequent basis.

(2) Quarterly review of occupational exposures. The RSO or designate will review at least quarterly the external radiation doses of authorized users and workers to determine that their doses are ALARA in accordance with the provisions of this program.

(3) Review of records of radiation surveys. The RSO or designate will review radiation surveys in unrestricted and restricted areas to determine that dose rates and amounts of contamination were at ALARA levels during the previous quarter.

#### b. Education Responsibilities for ALARA Program

(1) The RSO or designate will schedule briefings and educational sessions to inform workers of ALARA program efforts.

(2) The RSO or designate will ensure that authorized users, workers, and ancillary personnel who may be exposed to radiation will be instructed in the ALARA philosophy and informed that the site, management and RSO are committed to implementing the ALARA concept.

#### c. Cooperative Efforts for Development of ALARA Procedures Radiation workers will be given opportunities to participate in the procedures that they will be required to follow.

(1) The RSO or designate will be in close contact with all users and workers in order to develop ALARA procedures for working with radioactive materials.

(2) The RSO or designate will establish procedures for receiving and evaluating the suggestions of individual workers for improving health physics practices and will encourage the use of those procedures.

d. Reviewing Instances of Deviation from Good ALARA Practices. The RSO or designate will investigate all known instances of deviation from good ALARA practices and, if possible, will, determine the causes. When the cause is known, the RSO or designate will implement changes in the program to maintain doses ALARA.

### 4. Authorized Users

#### a. New Methods of Use Involving Potential Radiation Doses

(1) The authorized user will consult with the RSO or designate during the planning stage before using radioactive materials for new uses.

(2) The authorized user will review each planned use of radioactive materials to ensure that doses will be kept ALARA. Trial runs may be helpful.

#### b. Authorized User's Responsibility to Supervised Individuals

(1) The authorized user or designate will explain the ALARA concept and the need to maintain exposures ALARA to all supervised individuals.

(2) The authorized user or designate will ensure that supervised individuals who are subject to occupational radiation exposure are trained and educated in good health physics practices and in maintaining exposures ALARA.

### 5. Individuals Who Receive Occupational Radiation Doses

a. Workers will be instructed in the ALARA concept and its relationship to work procedures and work conditions.

b. Workers will be instructed in recourses available if they feel that ALARA is not being promoted on the job.

### 6. Establishment of Investigational Levels in Order to Monitor Individual

### Occupational External Radiation Doses

This institution hereby establishes investigational levels for occupational external radiation doses which, when exceeded, will initiate review or investigation by the RSC and/or the RSO or designate. The investigational levels that we have adopted are listed in Table 1. These levels apply to the exposure of individual workers.

#### Personnel dose less than Investigational Level I.

Except when deemed appropriate by the RSO or designate, no further action will be taken in those cases where an individual's dose is less than Table I values for the Investigational Level I.

b. Personnel dose equal to or greater than Investigational Level I but less than Investigational Level II. The RSO or designate will review the dose of each individual whose quarterly dose equals or exceeds Investigational Level I and will report the results to the individual and the consulting physicist following the quarter when the dose was recorded. If the dose does not equal or exceed Investigational Level II, no action related specifically to the exposure is required unless deemed appropriate by the RSO or designate. The RSO or designate will, however, review each such dose in comparison with those of others performing similar tasks as an index of ALARA program quality and will record the review.

c. Personnel dose equal to or greater than Investigational Level II. The RSO or designate will investigate in a timely manner the causes of all personnel doses equaling or exceeding Investigational Level II and, if warranted, will take action. A report of the investigation, any actions taken, and a copy of the individual's Form NRC-5 or its equivalent will be presented to the individual and the RSO and/or designate. The details of these reports will be documented.

d. Reestablishment of investigational levels to levels above those listed in Table 1.

In cases where a worker's or a group of workers' doses need to exceed an investigational level, a new, higher investigational level may be established for that individual or group on the basis that it is consistent with good ALARA practices. Justification for new investigational levels will be documented.

The RSO designate can be – consulting physicist who will report back to the RSO.

The AU may also use the consulting physicist as a designee for education or report generation purposes only. (physicist will not prescribe or administer radioactive materials or studies).

# Model Rules for General Safety

- Wear laboratory coats or other protective clothing at all times in areas where radioactive materials are used.
- Wear disposable gloves at all times while handling unsealed radioactive materials.
- Either after each procedure or before leaving the area, monitor your hands for contamination in a low background area with a crystal probe or camera.
- Use syringe shield for routine preparations of multi-dose vials and administrations of radiopharmaceuticals to patients, except in those circumstances in which their use is contraindicated (e.g., through use of a butterfly valve).
- Never eat, drink, smoke or apply cosmetics in any area where radioactive material is used or stored.
- Never store food, drink or personal effects in areas where radioactive material is used or stored.
- Wear your personnel monitoring device at all times while in areas where radioactive materials are used or stored. These devices should be worn as prescribed by the Radiation Safety Officer. When not being worn to monitor occupation exposures, personnel monitoring devices should be stored in the work place in a designated low-background area.
- Wear a finger exposure monitor during preparation, assay, and injection of radiopharmaceuticals; and when holding patients during procedures.
- Dispose of radioactive waste only in designated, labeled, and properly shielded receptacles.
- Never pipette by mouth.
- Wipe-test byproduct material storage, preparations, and administration areas weekly for contamination. If necessary, decontaminate or secure the area for decay.
- Confine radioactive solutions in shielded containers that are clearly labeled. Radiopharmaceutical multi-dose diagnostic vials and therapy vials should be labeled for the isotope, the name of the compound, and the date and time of receipt or preparation. A log book should be used to record the preceding information and total prepared activity, specific activity as mCi/cc at a specified time, total volume prepared, total volume remaining, the measured activity of each patient dosage, and any other appropriate information. Syringes and unit dosages should be labeled with the radiopharmaceutical name or abbreviating, type of study, or the patient's name.
- Assay each patient dosage in the dose calibrator before administering it. Do not use a dosage if it is more than 10 percent off from the prescribed dosage, except for prescribed dosages of less than 10 microcuries. When measuring the dosage, you need not consider the radioactivity that adheres to the syringe wall or remains in the needle. Check the patient's name and identification number and the prescribed radionuclides, chemical form, and dosage before administering.
- Always keep flood sources, syringes, waste and other radioactive material in shielded containers.
- Working with radioactivity while having an open wound is prohibited unless the wound is properly dressed and protected.
- With a radiation detection survey meter, survey the kit preparation, injection areas & labeled map areas daily for contamination. If necessary, decontaminate or secure the area for decay.
- Dose drawing area should be covered with disposable absorbent paper.
- Liquid waste shall not be disposed of into the sewage system.
- All written records of radioactive material receipt, use, and disposal must be complete, current and readily available.