

## APPENDIX D

### RADIATION SAFETY TRAINING PROGRAM

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#### **Model Training Program**

Model procedures for describing training programs appear below. These models provide examples of topics to be used for training, based on the experience, duties, and previous training of personnel attending the training. The topics chosen will depend on the purpose of the training, the audience, and the state of learning (background knowledge) of the audience. These models also may be useful to identify topics for annual refresher training.

Refresher training should include topics with which the individual is not involved frequently and requires reaffirmation. Topics for refresher training need not include review of procedures or basic knowledge that the trainee routinely uses.

Applicants may either adopt these model procedures or develop an alternative program to meet Department requirements. Guidance on requirements for training and experience for Authorized Medical Physicists and Authorized Users who engage in certain specialized practices is also included.

#### **Model Training Program for Medical Uses of Radionuclides, Sealed Sources, and Medical Devices Containing Sealed Sources**

Personnel will receive instruction before assuming duties with, or in the vicinity of, radioactive materials during annual refresher training, and whenever there is a significant change in duties, regulations, terms of the license, or type of radioactive material or therapy device used. Records of worker training will be maintained for at least 3 years. The training records will include the topic of the training, the date of the instruction or training, the name(s) of the attendee(s), and the names of the instructor(s).

#### **Training for Individuals Involved in the Use of Radioactive Material**

Training for professional staff (e.g., Authorized User, Authorized Medical Physicist, Authorized Nuclear Pharmacist, Radiation Safety Officer, nurse, dosimetrist, technologist, and therapist) may contain the following elements for those who provide or are involved in the care of patients during diagnostic or therapeutic procedures in the following topics, **commensurate with their duties**:

- Basic radiation biology, e.g., interaction of ionizing radiation with cells and tissues;
- Basic radiation protection to include concepts of time, distance, and shielding;
- Concept of maintaining exposure ALARA (RH-1004);

- Risk estimates, including comparison with other health risks;
- Posting requirements (RH-1303);
- Proper use of personnel dosimetry (when applicable);
- Access control procedures (RH-1303, RH-1308);
- Proper use of radiation shielding, if used;
- Patient release procedures (RH-8420);
- Instruction in procedures for notification of the Radiation Safety Officer and Authorized User, when responding to patient emergencies or death, to ensure that radiation protection issues are identified and addressed in a timely manner. The intent of these procedures should in no way interfere with or be in lieu of appropriate patient care (RH-2803, RH-8551, RH-8603, RH-8633);
- Occupational dose limits and their significance (RH-1200);
- Dose limits to the embryo/fetus, including instruction on declaration of pregnancy (RH-1207);
- Worker's right to be informed of occupational radiation exposure (RH-2804);
- Each individual's obligation to report unsafe conditions to the RSO (RH-2803);
- Applicable regulations, license conditions, information notices, bulletins, etc. (RH-2803);
- Where copies of the applicable regulations, the Department license, and its application are posted or made available for examination (RH-2802);
- Proper recordkeeping required by Department regulations (RH-2803);
- DOT training for the Radiation Safety Officer or a properly identified designee.
- Appropriate surveys to be conducted (RH-1300);
- Proper calibration of required survey instruments (RH-1300);
- Emergency procedures;
- Decontamination and release of facilities and equipment (RH-1220, RH-410);
- Dose to individual members of the public (RH-1208); and
- Licensee's operating procedures (e.g., survey requirements, instrument calibration, waste management, sealed source leak testing) (RH-8306).

**Training for the Staff Directly Involved in Administration to or Care of Patients Administered Byproduct Material for Which A Written Directive Is Required (Including Greater than 30 microCuries of I-131), or Therapeutic Treatment Planning**

In addition to the topics identified above, the following topics may be included in instruction for staff involved in the therapy treatment of patients (e.g., nursing, Radiation Safety Officer, Authorized Medical Physicist, Authorized User, and dosimetrist) in the following topics, **commensurate with their duties:**

- Leak testing of sealed sources (RH-8405);
- Emergency procedures (including emergency response drills) (RH-8551, RH-8603, RH-8633);
- Operating instructions (RH-8306, RH-8633);
- Computerized treatment planning system (RH-8648);
- Dosimetry protocol (RH-8635);
- Detailed pretreatment quality assurance checks (RH-8306, RH-8633);
- Safe handling (when applicable) of the patient's dishes, linens, excretions (saliva, urine, feces), and surgical dressings that are potentially contaminated or that may contain radioactive sources (RH-8551, RH-8603);
- Patient control procedures (RH-8551, RH-8603, RH-8633);
- Visitor control procedures, such as visitors' stay times and safe lines in radiation control areas (patient's room) (RH-8551, RH-8603, RH-8633);
- Licensee's Written Directive Procedures, to ensure that each administration is in accordance with the WD, patient identity is verified, and where applicable, attention is paid to correct positioning of sources and applicators to ensure that treatment is to the correct site (or, for GSR, correct positioning of the helmet) (RH-8308);
- Proper use of safety devices and shielding to include safe handling and shielding of dislodged sources (or, in the case of remote afterloaders, disconnected sources) (RH-8603, RH-8633);
- Size and appearance of different types of sources and applicators (RH-8603, RH-8633);
- Previous incidents, events, and/or accidents; and
- For remote afterloaders, teletherapy units, and GSR units; initial training provided by the device manufacturer or by individuals certified by the device manufacturer that is device model-specific and includes:
  - Design, use, and function of the device, including safety systems and interpretation of various error codes and conditions, displays, indicators, and alarms;

- Hands-on training in actual operation of the device under the direct supervision of an experienced user including “dry runs” (using dummy sources) of routine patient set-up and treatment and implementation of the licensee’s emergency procedures;
- A method of determining each trainee’s competency to use the device for each type of proposed use, such as practical examinations.

### **Additional Training for Authorized Medical Physicists**

Applicants for licenses to include Authorized Medical Physicists who plan to engage in certain tasks requiring special training should ensure that the Authorized Medical Physicists is trained in the activities specific to the different types of uses listed in RH-8316.

Note, for example, that additional training is necessary for Authorized Medical Physicists planning tasks such as remote afterloader therapy, teletherapy, GSR therapy, the use of the treatment planning system that applicants contemplate using, as well as calculation of activity of Sr-90 sources used for ophthalmic treatments (RH-8605). Medical physicists must also have training for the type(s) of use for which authorization is sought that includes hands-on device operation, safety procedures, clinical use, and the operation of a treatment planning system, as required in RH-8316.

### **Additional Training for Authorized Users of Radioactive Materials for Which a Written Directive Is Required**

Applicants for licenses should carefully consider the type of radiation therapy that is contemplated. In addition to the training and experience requirements of RH-8560, RH-8580, RH-8610, RH-8615, and RH-8660, attention should be focused on the additional training and experience necessary for treatment planning and quality control system, and clinical procedures. Refer to the training and experience requirements associated with specialized uses discussed in RH-8560, RH-8610, RH-8615, and RH-8660 of Section 9.

### **Training for Ancillary Staff**

Ancillary staff includes personnel engaged in janitorial and/housekeeping duties, dietary, laboratory, security and life-safety services, and other non-radiation workers. Ancillary staff will receive hazard awareness training to insure these individuals understand the possible hazards, safety precautions, and emergency procedures related to the use and storage of radioactive material. The training will include instruction commensurate with potential radiological health protection problems present in the work place. Alternatively, prohibitions on entry into controlled or restricted areas may be applied to ancillary personnel unless escorted by trained personnel. Topics of instruction may include the following:

- Storage, transfer, or use of radiation and/or radioactive material (RH-2803);
- Potential biological effects associated with exposure to radiation and/or radioactive material, precautions or procedures to minimize exposure, and the purposes and

functions of protective devices (e.g., basic radiation protection concepts of time, distance, and shielding) (RH-2803);

- The applicable provisions of Department regulations and licenses for the protection of personnel from exposure to radiation and/or radioactive material (e.g., posting and labeling of radioactive material) (RH-2803);
- Responsibility to report promptly to the licensee any condition that may lead to or cause a violation of Department regulations and license conditions or unnecessary exposure to radiation and/or radioactive material (e.g., notification of the RSO regarding radiation protection issues) (RH-2803);
- Appropriate response to warnings made in the event of any unusual occurrence or malfunction that may involve exposure to radiation and/or radioactive material (RH-2803);
- Radiation exposure reports that workers may request, as per RH-2804 (RH-2803).