DIAGNOSTIC RADIOLOGY

PURPOSE

This procedure defines the responsibilities for protective equipment, radiation and safety surveys, operating procedures and quality assurance programs for x-ray machines used on humans for diagnostic purposes in the Diagnostic Radiology Division of the Radiology Department.

POLICY

The **Radiation Safety Committee** is responsible for assuring that each individual who prescribes or uses any form of ionizing radiation in or on humans is properly qualified through training and experience that meets all regulatory requirements. Routine clinical uses of x-rays for diagnosis are controlled by qualified radiologists and radiologic technologists and are not subject to review or approval by the Radiation Safety Committee. Research or experimental applications of radiation to humans must be reviewed and approved by the Human Uses Subcommittee of the Radiation Safety Committee (RPR 40).

Radiation safety and quality assurance procedures for the diagnostic use of x-rays are prepared, implemented and supervised by the **Diagnostic Radiological Physicist (DRP)** in the Diagnostic Radiology Division of the Radiology Department. The **DRP** submits a copy of all new or revised diagnostic x-ray procedures involving any aspect of radiation protection and quality assurance to the **Radiation Safety Officer (RSO)** for review and documentation. The **RSO** submits comments, suggestions or proposed changes to the **DRP** for action. The **RSO** reports on the status and acceptability of the procedures to the **Radiation Safety Committee** at least annually.

Users of x-ray machines for diagnostic purposes are responsible for radiation protection of employees and patients. Quality assurance for equipment and procedures is an integral part of the responsibility for patient welfare and is, therefore, the responsibility of the medical and administrative staffs of the Radiology Department at University Hospital and Wasatch Clinic.

The **RSO** is responsible for assuring that all equipment, facilities, procedures and practices involving ionizing radiation comply with applicable federal and state laws and regulations, and that complete and accurate records of actions pertaining to radiation protection are maintained.

REGISTRATION

The **RSO** shall maintain complete records of the x-ray machines possessed by the Radiology Department, based on information submitted by the **DRP** for each machine. All x-ray machines must be registered annually with the Utah Division of Radiation Control (URC). To avoid duplication or omission of records, **registration forms are to be submitted to the URC only by the RSO**. The Radiology Department shall reimburse the Radiological Health Department for the cost of registration.

INSPECTIONS

Each x-ray machine must be inspected at regular intervals by a qualified expert (URC, R313-16). The inspection shall include machine function, film processing, facility design including shielding, operator procedures, documentation of operator qualifications, and evaluation of patient exposures. The **RSO** is responsible for assuring that appropriate inspections are performed and documented for all University x-ray facilities.

The Radiology Department employs the **DRP** (a qualified expert) who performs the regular inspections of x-ray machines belonging to the Radiology Department and maintains the records of such surveys. Any defect or malfunction identified during such surveys is to be reported in writing to the **RSO**, who is responsible for assuring that corrections are made and for the necessary documentation.

QUALITY ASSURANCE PROGRAMS

The Radiology Department shall develop and maintain a quality assurance (QA) program in accordance with

guidelines published by the U.S. Food and Drug Administration (FDA), the American Association of Physicists in Medicine (AAPM) and/or the National Council on Radiation Protection and Measurement (NCRP).

DIAGNOSTIC X-RAY PROCEDURES

All diagnostic x-ray procedures shall be performed according to radiation protection procedures in the University of Utah *Radiation Safety Manual and Procedures* and in compliance with URC Rules in chapter R313-28.

TRAINING

The **DRP** shall ensure that all Diagnostic Radiology personnel, Surgery personnel, and Ward personnel involved in care of patients being x-rayed have received appropriate radiation safety training. Documentation of radiation safety training for these personnel shall be provided to the Radiological Health Department.

All staff radiologists **must** be certified by the American Board of Radiology or meet the training requirements stated in chapter R313-28 of the URC Rules. Radiologic technologists **must** be certified or meet the URC training requirements.

REFERENCES

National Council on Radiation Protection and Measurements, Bethesda, MD:

Quality Assurance for Diagnostic Imaging Equipment, NCRP Report No. 99, 1988.

Medical X-ray, Electron Beam and Gamma-ray Protection for Energies up to 50 MeV, NCRP Report No. 102, 1989.

Radiation Protection for Medical and Allied Health Personnel, NCRP Report No. 105, 1989.

Implementation of the Principle of As Low As Reasonably Achievable (ALARA) for Medical and Dental Personnel, NCRP Report No. 107, 1990.

University of Utah, *Radiation Safety Policy Manual* and Radiation Safety Procedures and Records.

Utah Department of Environmental Quality, Division of Radiation Control, *Utah Radiation Control Rules*:

Standards for protection against radiation, R313-15.

General requirements applicable to the installation, registration, inspection and use of radiation machines, R313-16.

Use of x-rays in the healing arts, R313-28.