Radiation Safety practices

Students will be provided with a radiation safety practices handout which can also be accessed from the Radiologic Technology Web page.

Students will follow the ALARA and the cardinal rules of radiation safety as discussed in their first day of the RADT 119 class, which is a clinical class conducted on campus beginning the third week of May each year. Radiation safety practice objectives are reinforced throughout the program in each RADT class, both clinical and didactic with advanced radiobiology concepts and regulations addressed in classes as noted in the syllabi. See appendix in handbook for curriculum sequence. In addition, a radiation safety handbook is provided to all students and can be found on the Rad. Tech web page under link entitled Radiation Safety handbook. The handbook is also found outside of the energized lab in HC 430.

All students are expected to follow radiation safety practices in the lab as well as at the clinical sites. Students are to wear their radiation dosimeters for all labs and must always wear them at the clinical site. Failure to do so at the clinical site will result in a grade reduction and continued non-compliance may result in unsuccessful completion of the clinical course.

Students must always wear lead aprons and thyroid shields while assisting in fluoroscopic procedures. They are required to wear lead aprons on portable and during OR procedures.

EXPOSURE MONITORING (DOSIMETERS) AND IDENTIFICATION

Montgomery College provides dosimetry badges (Optically Stimulated Luminescent Dosimeters or OSL) for the Radiologic Technology students. The students will always wear the OSL while working with any form of ionizing radiation. It is to be worn around the upper chest area (on the collar) at all times. When wearing protective lead apparel, the dosimeter is to be worn above this apparel. No student will be allowed to work in the clinical areas or classroom energized laboratory area without this film badge. Appropriate protective wear will be used according to the procedure protocol.

Under no circumstance is a student to hold a patient or image receptor for an exposure.

Badge inserts are changed monthly, and it is the responsibility of each individual student to see that the badge insert is changed before the 20th of each month. **Should a student not turn in their badge prior to the deadline, points may be taken off the final grade of the clinical course in which they are enrolled.** Failure to adhere to this policy may result in an inaccurate radiation exposure reading since the rest of the badges will be mailed to the dosimetry service with the "control" badge. However, students should wear their badge even if it is past the expiration date until a new badge is obtained.

A printout from the vendor who provides the OSL's will be posted each month in the College classroom for each student to be able to identify his/her radiation exposure reading *using badge number only*. All other identifying information will be removed from this report. The radiation safety officer maintains the original of each monthly report in a secure place. Students will be consulted for any reading reported for 10 or more millirems on a monthly report to determine how the exposure has occurred. A reading over 40 millirems for the month will necessitate a possible change in rotation from high exposure areas or procedures.

A monthly checklist with the student's initials is now posted in the energized lab above the monthly dosimeter printout. Each student is asked to check their monthly reading and place a checkmark in the column provided next to their initials. The dosimeters usually arrive by the 10th day of the month and will be placed in the student mailboxes. The students are expected to switch out their old dosimeters and the RSO (Full Time Rad. Tech Faculty) will mail them back to Landauer within the next week.

PREGNANCY POLICY

At monthly information sessions and during orientation of newly accepted students the pregnancy policy is reviewed. In addition, an additional review of the policy is incorporated into the RADT 119 (Clinical radiology I) class

The National Council on Radiation Protection and Measurement (NCRP) recommends that the dose equivalent to the embryo-fetus from occupational exposure to the expectant mother should be limited to 0.5 REM for the entire gestational period. It is also stated that females involved in the occupation may voluntarily disclose their possible pregnancy to their supervisor if suspected. Through proper instruction to these precautions, it is possible to limit all occupational exposure to under 0.5 REM per year and prevent fetal dose equivalents from being surpassed.

All students enrolled in the Radiologic Technology Program are instructed in proper safety precautions and personnel monitoring prior to being admitted to any ionizing radiation area. Students are required to abide by **ALL** safety precautions and importance of keeping exposure as low as practical through a combination of time, distance and shielding is stressed.

Should any student suspect pregnancy, she is recommended to voluntarily disclose it to the Program Coordinator. This must be in writing and indicate the expected date of delivery. In the absence of this information, a student cannot be considered pregnant.

Upon voluntary disclosure of the pregnancy, the student will:

1. Meet with the Program Coordinator regarding the nature and potential radiation injury associated with in-utero exposure, the regulatory limits established by the NCR Regulatory Guide 8.13 and the required preventative measures to be taken throughout the gestational period. A statement of receipt of this information will need to be signed at this time.

2.The pregnant student has the option to complete the program without any modifications. If requested by the student, modifications will be made for clinical rotation during the pregnancy. If the student requests modifications, upon consultation with the student the faculty and clinical instructor from the clinical site will finalize the rotation schedule

3. The student will abide by the following:
   a. Strict adherence to ALL safety precautions for protection purposes.
   b. A second dosimeter will be provided and is to be worn at the student's waist, to monitor fetal dose.
   c. At any time that the pregnant students feels she is working in an unsafe area or under conditions she feels detrimental to herself or fetus, stop immediately and report to the clinical instructor.
   d. At no time and for no reason will the pregnant student place herself in the primary beam of radiation.

4. If a student chooses to temporarily leave the program, every effort will be made to assure a successful return to the program. As always, return into the program after a break is dependent on clinical space availability and student may be asked to remediate clinically or didactically as part of her return.

5. The student must realize that she must complete, upon her return or when she is no longer pregnant all the clinical competencies she may have missed due to voluntary modifications as well as related coursework.

6. Students have the option of withdrawing declaration of pregnancy at any time. This must also be presented in writing and submitted to the program coordinator.

REPEATING RADIOGRAPHS

When a student must repeat a radiograph taken on a patient, **the student must have a registered technologist in the room with him or her, no matter the level of competence.** At all times, it is imperative to keep any unnecessary exposure to a minimum for the patients.

Students are required to document all repeats. The student should enter the Repeat in PX/DX which will request a verification from the supervising technologist that they may have assisted and did observe the student performing the Repeat. A detailed tutorial will be available on the E-value web site. Students that do not record their repeats will be penalized and conference due to this being a Program requirement.
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COMMUNICABLE DISEASE POLICY

Students with known communicable diseases will need to follow the clinical facilities protocol for personnel with communicable diseases. The college has no jurisdiction over a clinical facilities communicable disease protocol. Please be aware that radiography students take part in invasive procedures. As part of the RADT 119 class and prior to clinical rotations, students are instructed in Standard and Universal Precautions as well as OSHA regulations.

At monthly information sessions and during orientation of new accepted students, students are advised that all immunizations must be up to date and HEB B vaccine is required.

During student experiences in the clinical setting, the student may possibly come in contact with diseases, equipment, and treatments that may be hazardous to the individual and/or to an unborn fetus. It is expected that the student utilize standard. universal and OSHA precautions with patient care procedures to minimize risks to the student and/or unborn fetus. If a student has an incident occur involving contact with a communicable disease and/or bloodborne pathogens, it is expected that the student **follow** their **affiliate's exposure control policies**. It is then the student's responsibility to see their own physician immediately to establish baseline testing and seek any required follow-up. TB exposure should be followed immediately with a PPD or if applicable a chest x-ray and a three (3) month follow-up after that. A copy of the incident should by brought back to the College for the student's file. *If the student comes into contact with diseases outside of the Program or contracts diseases which may be hazardous to other students, patients, or hospital personnel, it must be reported to the Montgomery College Security with 24 hours of incident as well as notifying the Program Coordinator*. Security will forward to Rowena D'Souza, Risk Manager for Montgomery College. .

A student, who may be exposed to a communicable disease, may be asked to leave the clinical area until incubation periods have expired, in cases such as chicken pox. Some diseases may be fatal to patients with compromised immune system. Any time missed in this case, must be completed.

LATEX SENSITIVITY

Students with known latex sensitivity or allergies should be aware that the college cannot guarantee non-exposure to latex in the clinical arena.

MRI SAFETY

The magnetic field is constant in an MRI room and highly magnetic items such as certain jewelry, implanted devices, medical equipment and credit cards can be adversely affected by this field, causing potential injury to the student as well as to the patient. Gradient magnetic fields cause many things including peripheral nerve stimulation. In addition radiofrequency fields used during an MRI can cause heating/burning. Therefore students should be aware of what is on their person as well as what is on or in their patient before entering the MRI suite. Students should familiarize themselves with the facilities Magnetic ZONE policies (safe and unsafe areas). An MRI screening document will be completed by each enrolled student (see appendix E of the Student Handbook)

Students will receive further education on MRI safety in RADT 119, the first class of the program and offered in the summer and in RADT 207, offered in the final semester of the program. If there is a concern based on the screening tool, the student will be appropriate advised by faculty

FEDERAL LAW CONCERNING CHEMICAL HAZARDS

Federal law requires that all individuals must be notified about hazardous chemicals present in the work place. This law applies to all occupations, with the basic purpose of raising the level of conscientiousness on chemical safety (but not to the point of over concern). Obviously, there are safe levels, proper procedures and precautions to be followed as well in the hospital.

X-ray and Photographic Processing

It should be noted that at this time all of the program's clinical affiliates are filmless. However, in the event a future clinical site is secured that uses film the following would apply:

Photographic chemicals may be used in a hospital or office for processing x-ray film, for films used in electron or light

microscopy and for slides and prints for papers and lectures. Some of these chemicals must be used with more than routine precautions.

Photographic developers must be in an alkaline solution for full activity. Sometimes a two solutions formulation is used in which a small stock of concentrated alkali is added to a large volume of developer to obtain a working solution. In a similar way, some fixers require the addition of concentrated acid to a stock solution. This concentrated (Glacial) **acetic acid** is not only a strong, corrosive acid, but also produces a highly corrosive vapor that is extremely flammable.

Even the more dilute working solution should be handled with care since prolonged or repeated contact can lead to skin irritation, creaking and blistering. Virtually all photographic chemicals, especially developers, can cause an allergic reaction that is characterized by itching, re scaly skin. The use of gloves, tongs, or barrier creams ,minimize skin contact hazards.

Most photographic chemicals emit irritating vapors which can affect the nose and eyes. Work areas should be well ventilated to reduce this hazard. Some automatic x-ray film processors store large volumes of solutions in plastic reservoirs. As the liquids are used up, vapors accumulate in the "air space" above. When the lid is removed to refill the reservoir, high levels of vapor may be released. For example, sulfur dioxide may accumulate in the reservoirs containing photographic fixers.

MONTGOMERY COLLEGE
Radiologic Technology Program
MRI SCREENING FORM

Students are sometimes asked to assist in moving patients in the MRI room or may be asked to transport patients to the MRI suite. Students need to be aware of the MRI zones when transporting. Information on MRI safety and MRI zones will be discussed in RADT 119 and in RADT 101. Before entering the MR environment or MR system room, students may be advised to remove the following metallic objects including hearing aids, dentures, partial plates, keys, beeper, cell phone, eyeglasses, hair pins, barrettes, jewelry, body piercing jewelry, watch, safety pins, paperclips, money clip, credit cards, bank cards, magnetic strip cards, coins, pens, pocket knife, nail clipper, tools, clothing with metal fasteners, & clothing with metallic threads.

Please address the following
Have you had an injury to the eye involving a metallic object or fragment (e.g., metallic slivers, shavings, foreign body, etc.)? □ No □ Yes
If yes, please describe: _____
Have you ever been injured by a metallic object or foreign body (e.g., BB, bullet, shrapnel, etc.)?
No□ Yes If yes, please describe:
_____
Please indicate if you have any of the following:

- Aneurysm clip(s) □ Yes □ No
- Spinal fixation or fusion devices Yes □ No
- Cardiac pacemaker □ Yes □ No
- Implanted cardioverter defibrillator (ICD) □ Yes □ No
- Electronic implant or device □ Yes □ No
- Magnetically-activated implant or device □ Yes □ No
- Neurostimulation system □ Yes □ No
- Spinal cord stimulator □ Yes □ No
- Internal electrodes or wires □ Yes □ No
- Bone growth/bone fusion stimulator □ Yes □ No
- Cochlear, otologic, or other ear implant □ Yes □ No
- Insulin or other infusion pump □ Yes □ No
- Implanted drug infusion device □ Yes □ No
- Any type of prosthesis (eye, penile, etc.) □ Yes □ No
- Heart valve prosthesis □ Yes □ No
- Eyelid spring or wire □ Yes □ No
- Artificial or prosthetic limb □ Yes □ No
- Metallic stent, filter, or coil □ Yes □ No
- Shunt (spinal or intraventricular) □ Yes □ No
- Vascular access port and/or catheter □ Yes □ No
- Radiation seeds or implants □ Yes □ No
- Swan-Ganz or thermodilution catheter □ Yes □ No
- Medication patch (Nicotine, Nitroglycerine) Yes □ No
- Any metallic fragment or foreign body □ Yes □ No

- Wire mesh implant □ Yes □ No
- Tissue expander (e.g., breast) □ Yes □ No
- Surgical staples, clips, or metallic sutures □ Yes □ No
- Joint replacement (hip, knee, etc.) □ Yes □ No
- Bone/joint pin, screw, nail, wire, plate, etc. □ Yes □ No
- IUD, diaphragm, or pessary □ Yes □ No
- Dentures or partial plates □ Yes □ No
- Tattoo or permanent makeup □ Yes □ No
- Body piercing jewelry □ Yes □ No
- Hearing aid (Remove before entering MR system room) □ Yes □ No
- Other implant _____ Yes □ No

I attest the above information is correct to the best of my knowledge. I have read and understand the entire contents of this form, and I have had the opportunity to ask questions regarding the information on this form. Faculty will review this form and those students who do indicate Yes to any of the above will be advised by Faculty to assure the student's safety.

Student Name_____

Student Signature_____ Date _____

If student answers yes to any of the above screening protocol the following procedure will be followed by the student and the clinical site will be appropriately advised:

_____

_____

_____

_____

_____

_____

Clinical Coordinator

signature_____