Allied Health Department

Radiation Protection Program (RPP)

Policies & Procedures

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Allied Health- Radiologic Technology
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INTRODUCTION

San Diego Mesa College provides three educational programs that use x-radiation sources and are all registered under one facility number (24917). The three programs are Radiologic Technology, Dental Assisting and Animal Health Technology.

ALLIED HEALTH RADIATION PROTECTION PROGRAM (CDPH-RHB Facility #24917)

Philosophy - All students will be expected to perform instructor-supervised experiments using ionizing radiation.

1. Organization and Administration
   a. The Radiation Safety Officer (Christy Foster Bollman, B.S., R.R.A., (MR) (CT) (R), cfoster@sdccd.edu, 619-388-2666) oversees the Radiation Protection Program and maintains all proper documentation for state and federal compliance.
   b. The Program Directors work with the Radiation Safety Officer and are responsible for ensuring g required reporting to the CDPH-RHB in compliance with CCR Title 17.

2. Radiation Safety Policy
   OSHA and other safety guidelines are followed regarding radiation safety in the classroom and in the clinical setting. Personnel Whole Body Radiation Dosimeters for radiation monitoring are furnished for all radiology students. Dosimeters are to be worn at all times, and will be monitored on a monthly basis.

   The purpose is to inform students, faculty and administrators of procedures that must be followed to ensure radiation safety through the proper use and monitoring of radiation exposure.

   a. Radiation Monitoring
      i. Personal Radiation Dosimeters for radiation monitoring are furnished for radiology students and are to be worn as part of the uniform.
      ii. The dosimeter must be worn during all exposure activities in lab and in the clinical setting.
      iii. All students who have declared pregnancy, a fetal badge must be worn at all times.
      iv. Dosimetry reports will be distributed monthly and the students must review and log results on the Dosimetry Log Sheet.
      v. All Social Security Numbers and birthdates will be removed for student protection.

   b. ALARA Program for All Student Exposure Limits
i. The following levels of exposure for the ALARA program have been established and are listed below.

ii. If a student exceeds the Level I exposure limit in a month, the student will receive a verbal advising by the Program Director.

iii. If a student exceeds the Level II exposure limit in a month, the Radiation Safety Officer will meet with the student to determine the cause of the high exposure and counsel the student on how to reduce the exposure they are receiving. This will be documented in writing and placed in the student’s file.

<table>
<thead>
<tr>
<th>Region</th>
<th>Level I</th>
<th>Level II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole body (monthly)</td>
<td>250 mrem</td>
<td>500 mrem</td>
</tr>
<tr>
<td>Pregnancy monitor (monthly)</td>
<td>25 mrem</td>
<td>50 mrem</td>
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</tbody>
</table>

c. Excessive Radiation Exposure
   i. The Radiation Safety Officer will monitor all dosimetry reports.
   ii. If a student’s dosimeter reading exceeds the limit, the Radiation Safety officer will investigate the causes for the excessive exposure readings.
   iii. The investigation may include interviews with the student and clinical site and all relevant individuals.
   iv. All previous exposure readings for the student and clinical facility will be evaluated.
   v. The investigation is to evaluate why the exposure readings are elevated.
   vi. A report of the information for interviews and all other sources will be shared for corrective action and placed in the students file.
   vii. The counseling form will be used to document the event and be placed in student file.
   viii. If corrective action of the student is not implemented, and dose readings do not reduce, student will be removed from the program.

d. Radiation Safety Procedures for the Declared Pregnant Student
   The following radiation procedures must be followed:
   i. Continue to wear your whole body dosimeter on the outside of your collar.
   ii. Wear a second dosimeter, fetal badge, at the waist level.
   iii. If wearing a lead apron, the fetal badge goes under the lead at the level of the waist.
   iv. If there is not a wrap lead skirt, wear a lead shield and a half wrap apron wrapped around the back.
   v. Keep maximum distance between yourself and the tube and the patient.
   vi. Review the monthly fetal dosimeter exposure every month with the Radiation Safety Officer.
3. **ALARA – As Low As Reasonable Achievable**
   a. Any unauthorized exposure or activation of equipment will result in the student’s dismissal from the program.
   b. Any individual experiment or project will be reviewed and authorized by the faculty member or clinical instructor first.
   c. A student is required to exercise sound radiation protection practices at all times. At no time may a student participate in a procedure utilizing unsafe protection practices.
   d. Students shall practice “as low as reasonably achievable” (ALARA) guidelines, with respect to themselves, peers, healthcare personnel and patients.
   e. Students are not allowed to expose any human being or animal to the direct x-ray beam while in the school laboratory, without a physician, dentist or veterinarian written order.
      i. Students engaged in such practices must work under the direct supervision of a qualified practitioner.
   f. Phantoms and positioning devices are provided for campus laboratory experiments, as necessary.
   g. Students must remain behind the primary barrier for all exposures, except:
      i. When wearing protective lead apparel for directly supervised fluoroscopic laboratory experiments.
      ii. When wearing protective lead apparel while restraining an animal for an authorized x-ray procedure.
   h. The student is required to wear a lead apron with their dosimetry device worn on the collar outside the apron for fluoroscopic experiments.
   i. The program provides lead glasses, aprons, gloves, gonad shields and mobile shields for protective use.

4. **Dosimetry and Reports to Individuals**
   a. **Occupational Workers**
      i. The programs utilize Landauer Inc. (www.landauerinc.com) as a provider of dosimetry devices and analysis.
      ii. Program students and faculty are provided with dosimetry monitoring.
      iii. Each month the dosimetry results are reviewed by the Radiation Safety Officer and posted in a designated area in each program.
      iv. All dosimetry records are archived in the Radiation Safety Officer’s office. All dosimetry records are kept indefinitely, according to CA Code of Regulations (CCR), Title 17.
      v. Students and instructors are provided dosimeter devices by the program and are mandated to wear them during energized laboratory experiments and clinical training hours, with their dosimetry device worn on the collar outside the apron.
      vi. Each student and instructor is subject to the occupational exposure limits and the requirements for the determination of the
doses which are declared in CCR, Title 17.

vii. Occupational dose limits for adults (18 years of age or older):
   - Total effective dose of 5.0 rems (0.05 Sv) or effective dose of 15 rems (0.15 Sv) to the eye or 50 rems (0.5 Sv) to the skin or extremities.

viii. Occupational dose limits for minors (under 18 years of age):
   - Total effective dose of 0.5 rems (0.05 Sv) or effective dose of 1.5 rems (0.15 Sv) to the eye or 5.0 rems (0.5 Sv) to the skin or extremities.

ix. Requests for copies of dosimetry records will be accommodated within 30 days by the Radiation Safety Officer.

b. Pregnant Workers
   i. Definition of declared pregnant worker: A woman (female student) who has voluntarily informed her employer (or program director) in writing of her pregnancy and estimated due date.
   ii. The student is not required to notify the program, nor will she be dismissed from the program, if she is pregnant.
   iii. A student may withdraw their written declaration of pregnancy at any time.
   iv. Any student who declares her pregnancy in writing to the Program Director and who desires to continue the program will be required to wear an additional fetal dosimetry device and continue active and direct participation in all laboratory experiments while practicing proper radiation safety. If she prefers to discontinue and defer to the next year’s student cohort, she may do so. She may defer only once.
   v. The student is encouraged to talk to the Program Director about any questions or concerns she may have.

5. Area Monitoring and Radiological Controls
   a. Area Radiation Monitoring
      i. The entrance to each x-ray room is marked with signage, “Caution: X-ray”.
      ii. Conspicuously posted in the energized laboratory area are the following:
         - Operating and emergency procedures applicable to radiation sources
         - A current copy of Department Form RH-2364 (Notice to Employees)
         - Any notice of violation(s) or any order pursuant to the applicable regulations (immediately)
         - Current copies of user licenses
      iii. Proper signage is maintained by the Program Director.
      iv. Current copies of CCR Title 17, incorporated sections of 10 CFR 20 are available in the Radiation Safety Officer’s office.

b. Instrument Calibration and Maintenance
i. All experiments will be conducted on CDPH-RHB inspected x-ray machines, which are inspected annually using instruments and procedures compliant with CCR Title 17.

ii. The San Diego Community College District maintains service contracts for all x-ray machines and utilizes these contracts as necessary to correct any potential problems.

iii. Registration and physicist certification of all machines are available for review in the Program Director’s office.

iv. Operator manuals for each machine are available for review in the Program Director’s office.

v. The disposal of x-ray machines is made in compliance with CCR Title 17.

c. Quality Assurance/Quality Control

i. The program maintains all records regarding performance evaluations, acceptance testing and radiation safety of all x-ray machines.

ii. The program maintains required QC testing equipment in proper working order, including records of calibration frequency and type.

iii. Records are kept at least three years.

6. Emergency Exposure Situations

a. A student is required to notify the Radiation Safety Officer in writing when a situation arises that the student knows may affect the quality of the radiation monitoring report.

i. Examples may be leaving it attached to a lead apron or lab coat which has been stored in a radiographic/fluoroscopic room, passing it through an airport security (radiation) system or wearing it during a medical procedure.

b. In the event that a student receives an excessive dosimetry reading, a consultation with the Program Director and Radiation Safety Officer is required.

i. An excessive dose will be considered by the program as one that appears out of usual range for a student or faculty member’s usual practice, or exceeds regulatory limits.

ii. The Radiation Safety Officer will investigate to determine the reason (i.e.: student practices, equipment, or erroneous badge handling or reading). The student will be counseled regarding radiation safety practices and their employer (if applicable) notified.

iii. The student will be provided a written conference form for their record; a copy will also be kept by the program for five years as part of the student record.

iv. The CDPH-RHB will be notified (via telephone and in writing) of the event:
• Within 24 hours for any exposure that causes or is likely to cause a total effective dose of 5 rems (0.05 Sv) or effective dose of 15 rems (0.15 Sv) to the eye or 50 rems (0.5 Sv) to the skin or extremities.
• Immediately for any exposure that causes or is likely to cause a total effective dose of 25 rems (0.25 Sv) or effective dose of 75 rems (0.75 Sv) to the eye or 250 rems (2.5 Sv) to the skin or extremities.
• Reports will contain the caller’s name and call-back telephone number, description of event with exact location, date and time, the quantities and physical form of the licensed material involved, manufacturer and model number of any equipment that failed or malfunctioned, any personnel radiation exposure data available and corrective actions taken or planned.

v. The CDPH-RHB address is P.O. Box 997414, MS 7610, Sacramento, CA 95899-7414. The telephone number is (916) 327-5106.

vi. If a student has been found to have willfully mishandled or influenced the reading of another student’s film badge, the student may be dismissed from the program and/or reported to appropriate agencies.

7. Record Keeping and Reporting
   a. It is the responsibility of anyone to promptly report to the Radiation Safety Officer and/or Program Director any condition which may lead to or cause a violation of department regulations, inspection provisions, or an unnecessary exposure to radiation.
      i. The Program Director will notify the CDPH-RHB (via telephone and in writing) of the event within 24 hours, according to Title 17.
      ii. Individuals may choose to report the situation or incident directly to the CDPH-RHB.
      iii. The CDPH-RHB address is P.O. Box 997414, MS 7610, Sacramento, CA 95899-7414. The telephone number is (916) 327-5106.

8. Radiation Safety Training
   a. Occupational Workers
      i. The program provides training on each x-ray machine to each student and faculty. Documentation of this training is archived in the Program Director’s office.
      ii. No one is allowed to operate the energized lab on campus without having been trained on it and a trained radiology instructor is present.
      iii. After having been training on a particular machine, if the operator has any doubt as to the function or performance of it, he or she should stop and consult a faculty or clinical instructor.
iv. The program provides education to each operator as to the health risks of radiation exposure, methods to comply with ALARA and related state and federal regulations.

b. Non-Occupational Workers
   i. The Radiation Safety Officer shall work together with campus Facilities personnel to provide information and/or training for working around radiation equipment.

9. Internal Audit Procedures
   a. The Radiation Safety Officer maintains an annual, formal assessment of dosimetry results and compliance and reports the data to the Program Director.
   b. The Program Directors maintain an annual, formal audit of all other aspects of the Radiation Protection Program pertinent to their programs. Items include:
      i. Inspections and results
      ii. QA/QC
      iii. Training
   c. Internal audit data is available to the CDPH-RHB, program advisory committees and the public, upon request and in compliance with FERPA.

CLINICAL AFFILIATES
1. Radiation Protection Programs (RPP’s) are required for all licensees of radiation sources, including clinical affiliates (10 CFR 20, Section 20.1101). RPP’s are required for each facility’s annual machine registration with the CDPH-RHB.
2. The Allied Health Programs are required to verify the current status of radiation machine registrations of each clinical affiliate when applying for a Clinical Affiliate Site (CAS) certificate and submit a copy of the current machine registration with application to the CDPH-RHB.
3. Students are provided a detailed orientation to the Allied Health Radiation Protection Program upon admission to the program.
4. Students are oriented to their clinical affiliate RPP through their clinical instructors.

CLINICAL SUPERVISION OF STUDENTS
1. Students training at clinical affiliates assist or perform radiologic examinations of a living human being or animal ordered by a licentiate under the direct supervision of a qualified, licensed practitioner until competencies have been achieved and under indirect supervision after competencies have been achieved.
2. Clinical Instructors have the overall responsibility of supervision compliance at their site and report student radiation safety issues to the Program Directors and their own department administrators.
PROGRAM RESPONSIBILITIES
1. The program will provide a copy of the Allied Health Department Radiation Protection Policies to each student enrolled in the programs.

2. The program will provide the most current and applicable state-approved curriculum to the student.

3. The program will provide the most current and applicable state-approved curriculum to the instructor and will facilitate academic and equipment resources as necessary and applicable.

4. Upon successful completion, the program will provide certification to the student to be used with their CDPH-RHB application for appropriate licensures.

5. The program will keep copies of student records for five years.

6. The program will provide notification to the CDPH-RHB of any changes in facility location or telephone number, course offerings, program director or faculty, clinical affiliation agreements, student status (dismissals, withdrawals and graduations) within 30 days, according to Title 17 of the CA Code of Regulations, using form CDPH 8697 or 8696, as appropriate.

7. The program will comply with all applicable laws of CDPH-RHB Title 17.

INSTRUCTOR RESPONSIBILITIES
1. The instructor will understand and enforce the policies and procedures contained in this manual.

2. The instructor will present the most current and applicable state-approved curriculum to the student.

3. The instructor will require the student to attend all state-mandated didactic and laboratory sessions. The instructor will provide makeup opportunities as the instructor deems fit, within the required and available parameters of the program.

4. The instructor will not give the student a passing grade if the student has not attended all the required hours and completed all of the required laboratory assignments, as outlined by the CDPH-RHB.

5. The instructor will provide student attendance and performance data to the Program Director who will then issue certification to the student, if appropriate.

6. The instructor will comply with all applicable laws of CDPH-RHB Title 17.
7. The instructor will attend training for all equipment utilized by the program.

STUDENT RESPONSIBILITIES
The student will understand and comply with the policies and procedures contained in this manual.

REGULATORY CONTACT INFORMATION

California Dept of Public Health – Radiation Health Branch P. O. Box 997414, MS 7610 Sacramento, Ca 95899-7414 (916) 327-5106 www.cdph.ca.gov/rhb

IMPORTANT NOTE:

- The use of ionizing radiation is governed by state and federal law.
- The state regulations can be found in Title 17 (Public Health) of the California Code of Regulations: [http://ccr.oal.ca.gov/linkedslice/default.asp?SP=CCR-1000&Action=Welcome](http://ccr.oal.ca.gov/linkedslice/default.asp?SP=CCR-1000&Action=Welcome)
- The federal regulations can be found in 10 CFR 20: [http://www.gpoaccess.gov/cfr/](http://www.gpoaccess.gov/cfr/)
- Students are encouraged to access these sources directly for updated, complete and accurate information.
THE FOLLOWING ARE EXCERPTS FROM THE SYLLABUS ON RADIATION PROTECTION, PROVIDED BY THE CDPH-RHB. www.cdph.ca.gov/rhb

CDPH-RHB must be notified when an individual is exposed to excessive radiation (for other than prescribed medical purposes):

Immediate notification
   Total effective dose 25 rems (0.25 Sv) or more
   Eye dose equivalent of 75 rems (0.75 Sv) or more
   Shallow dose of 250 rems (2.5 Sv) or more

24-hour notification
   Total effective dose 5 rems (0.05 Sv) or more
   Eye dose equivalent of 15 rems (0.15 Sv) or more
   Shallow dose of 50 rems (0.5 Sv) or more

Health and Safety Code
   Unlawful for any person to direct, order, assist or abet a violation of certification provision.
   Anyone who violates, aids or abets the violations of any of the provisions of the law or regulations is guilty of a misdemeanor.

Technologists are to work within scope of certification and permits. Equipment must be within compliance.

Technologists must be competent in and comply with:
   Knowing the exact examination ordered before making an exposure
   Clearing the fluoro room of all non-essential person
   Collimating to area of interest
   Using gonad shields as appropriate
   Using correct technical factors (optimum kVp, lowest mA possible)
   Positioning the patient correctly before exposure
   Minimizing patient motion, while keeping the patient comfortable and under constant observation

Techs are prohibited by law from:
   Fluoroscoping without a specific order
   Making diagnoses
   Reporting diagnoses to patients unless ordered to do so by a physician
   Operating equipment without having been trained on it
   Performing fluoro procedures without a posted, valid state permit
   Performing fluoro procedures without appropriate supervision

Lead aprons must be worn by every person in the exam room, except the patient
Techs should stand as far away from the beam as possible
Behind the primary barrier, if possible

Additional protective devices should be worn, as appropriate
   Lean glasses, gloves, thyroid shields

CDPH-RHB Additional Rule for Students
General radiography students are not allowed to hold patients during radiographic exams.
Student Name:  
Date: 

To be turned in to the program on the 2\textsuperscript{nd} Thursday of the semester.

1. What does CDPH-RHB stand for?
2. What does ALARA stand for?
3. When may a student make a radiation exposure in the lab?
4. When may a student make a radiation exposure on a human being?
5. Where should the student stand when making a radiation exposure?
6. What will happen if a student makes an unauthorized exposure?
7. What measuring device is to be worn at all times in the energized lab and during clinical training?
8. Where is the above device worn, specifically?
9. What is your occupational limit for total effective dose? (include units)
10. Is an occupational worker/student required to notify the program/employer if she is pregnant?
11. If a student chooses to give notification of pregnancy, how must this be done?
12. If a student chooses to give notification of pregnancy, what will be given to the student?
13. Where is the Notice to Employees posted?
14. Where can you find a copy of California Code of Regulations (CCR), Title 17?
15. How often are the program’s x-ray machines inspected?
16. What are three examples of dosimetry device mishandling that requires notification to the program?
17. What happens if your radiation dosimetry report indicates excessive exposure?
18. How long are radiation dosimetry reports kept by the program? (specifically THIS report)
19. Does your clinical site have an RPP?
20. How do you receive orientation to your clinical site’s RPP?
21. Give an example of “misadministration” of radiation to a patient (item #2):
22. On page 9, are you a “user” or a “worker”?
23. On page 9, Section 30105, give two types of “Deliberate Misconduct” from (a)(1)(c):
24. When can the state inspect a radiation facility?
25. During inspections, could the state representative speak with you, the student?
26. How soon must your dosimetry report be given to you, when requested in writing?
27. A Fluoroscopy Permit is required of any technologist who does what three things?
28. On page 12, list all the things required of a technologist:
29. On page 12, list all the things prohibited for a technologist:
30. What is the website and phone number for the CDPH-RHB?