

3.3.3.3 Dental Radiation Safety

(a) Policy

All California Department of Corrections and Rehabilitation (CDCR) dental staff shall comply with all applicable safety and regulatory standards when operating radiation producing devices utilized by the CDCR.

(b) Purpose

To establish procedures and guidelines that ensure the safety of staff, patients and the workspace environment during all phases of the dental radiography process.

(c) Procedure

(1) The Health Program Manager (HPM) III and Supervising Dentist (SD) shall establish a Radiation Safety Program (RSP) for all dental clinics that contain dental radiographic equipment to monitor staff compliance with all applicable local, state and federal laws and safety regulations when capturing dental radiographic images. All clinical dental staff shall receive annual training on the RSP and shall demonstrate proper use of the procedures at all times. The HPM III shall maintain RSP training records for a period of three years. The RSP shall:

(A) Ensure coordination and scheduling of preventive maintenance for dental radiographic units by qualified service technicians.

(B) Ensure staff and patients do not receive unnecessary radiation exposure.

(C) Be reviewed annually by the HPM III and SD regarding content.

(2) The following procedures are designed to provide radiation protection for all occupationally and non-occupationally exposed persons within the dental clinics, with the goal of reducing radiation exposure to as low as reasonably achievable (ALARA). Some methods of protection may not be practical at all locations or in all instances, but the safety and operating procedures designed to reduce the risk of radiation exposure must be strictly followed to achieve the ALARA objectives.

(A) Only the following individuals shall be allowed to operate dental radiographic equipment:

1. Dental staff licensed in accordance with the Dental Board of California, *Dental Practice Act*, Chapter 4 Dentistry, Article 3, and Section 1656, Radiation Safety Requirements.
2. Radiologic technologists certified or granted a permit to use diagnostic or therapeutic X-rays on human beings pursuant to the California Health and Safety Code, Section 114870, subdivision (b) or (c), or Section 114885.

(B) Dental assistants, dental hygienists, and radiologic technologists shall operate dental radiographic equipment and take patient dental radiographs only upon the authorization of a dentist.

(C) All operators of radiographic equipment are responsible for following radiation safety guidelines.

(D) Radiation Exposure Monitoring

1. Federal regulations state that monitoring of individual employees for exposure to radiation is necessary if the employee is likely to receive more than ten percent of the allowable annual occupational dose limit. (The allowable annual occupational dose limit is 5000 milliroentgens [mR]). (Reference Code of Federal Regulations Title 10 (Energy), Chapter 1 (Nuclear Regulatory Commission), Part 20 (Standards for Protection Against Radiation), Subpart F (Surveys and Monitoring) Sec. 20.1502).
2. Beginning on January 1, 2024, and on January 1 every four years thereafter, the HPM III shall implement Section (c)(2)(D)3. and 4.
3. The HPM III shall ensure that radiation dosimetry badges are provided for all dental staff working within the vicinity of radiographic equipment.
 - a. Monitoring shall be performed for a period of 12 consecutive months.
 - b. Radiation monitoring badges shall be worn at chest level by participating staff.
 - c. The badges are not to be worn outside the dental treatment area.
4. The monitoring reports shall be reviewed monthly and/or quarterly as well as at the end of 12 consecutive months. Radiation exposure is within allowable limits if the result is less than 500 mR at the end of the 12 consecutive months.
5. In the event the result of an employee's dosimetry badge monitoring report exceeds ten percent of the allowable annual occupational dose limits, the HPM III shall have the dental radiographic unit(s) in the area(s) where the employee works inspected and corrected to be within standards.
6. The HPM III shall maintain a file of radiation monitoring reports for a period of four years.

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7. Radiation dosimetry badges shall be provided on a monthly or quarterly basis to declared pregnant dental staff.
 8. The HPM III shall report to the California Department of Public Health (CDPH), Radiologic Health Branch (RHB) any radiation exposure of dental personnel in excess of the allowable occupational dose limits.
- (E) Lead Protective Equipment
1. The safety and welfare of patients must be considered at all times. Appropriate shielding devices, such as gonad shielding, lead aprons, thyroid shields, portable shields, etc., shall be used at all times for all patients when dental radiographs are taken.
 2. A thyroid shield shall be utilized on all patients unless it interferes with the examination. (This is not a regulatory requirement, but is a statement of accepted good practice in keeping exposure to a minimum).
 3. All protective lead aprons shall contain 0.25 millimeters or more of lead equivalence. All aprons shall be stored on an apron rack or on hangers (not folded) to prevent bending or cracking of the protective lead lining.
 4. At a minimum, lead protective equipment shall be inspected annually by performing a manual and visual check to look for obvious cuts, rips, holes, cracks or tears.
 5. When a lead apron is found to be defective, staff shall cease using the apron and notify the Supervising Dentist Assistant (SDA) or SD to obtain a replacement.
- (F) All dental radiographic equipment shall have devices to limit the radiation exposure to patients and employees. These devices include filters that reduce unnecessary low energy radiation from the primary beam and collimators, which restrict the size of the X-ray beam. Staff shall not alter, remove, tamper with, or defeat these devices, or in any way cause needless radiation exposure.
- (G) All dental staff shall make every reasonable effort to maintain radiation exposure at the lowest possible dosage.
- (H) All dental staff exposing radiographs must comply with the CDPH, RHB, guidelines on dental radiology quality assurance.
- (I) All dental radiographic units shall be inspected and calibrated annually in accordance with CDPH, RHB requirements.
- (J) Dental personnel shall not hold a radiographic sensor in the patient's mouth while exposing a radiograph.
- (K) Dental staff shall immediately report to the SD and/or SDA any incidental equipment malfunction or condition that may cause any unnecessary radiation exposure.
- (L) During each exposure, only the patient shall be in the useful beam. All other individuals in the vicinity of the radiographic unit shall remain at least six feet from the useful beam or behind a protective barrier.
- (M) Mechanical support of the tube head and cone shall maintain the exposure position without drift or vibration.
1. Dental staff or patients shall never hold the tube housing or suspension arm of intraoral radiographic units during any exposure.
 2. If a problem with stability of the tube housing or suspension arm develops, the radiographic unit shall be taken out of service.
 3. The SDA, or designee, shall be notified immediately, and they shall arrange for service as soon as possible.
- (N) Areas or rooms that contain permanently installed X-ray machines as the only source of radiation shall be posted with a sign or signs stating "Caution X-ray."
- (3) A copy of radiographic certificates, rules and regulations, as required by the CDPH, RHB, shall be posted in each dental clinic in full view of all patients and staff.
- (4) External Imaging for Panoramic Radiographic Units
- (A) Position the patient following the instructions in the operator's manual.
 - (B) If the processed image appears misaligned and it is determined that operator error was not a contributing factor, the unit shall be taken out of service and the SD and/or SDA shall be notified. The SDA, or designee, shall arrange for service as soon as possible.

References

- Code of Federal Regulations Title 10 (Energy), Chapter 1 (Nuclear Regulatory Commission), Part 20 (Standards for Protection Against Radiation), Subpart F (Surveys and Monitoring) Sec. 20.1502
- California Health and Safety Code, Section 114870, Subdivision (b) or (c), or Section 114885

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- Dental Board of California, *Dental Practice Act*, Chapter 4 Dentistry, Article 3, and Section 1656, Radiation Safety Requirements

Revision History

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