REGULATORY GUIDE 21.0
GUIDE FOR DENTAL FACILITIES USING DENTAL RADIOGRAPHIC EQUIPMENT

Introduction

Operating and safety procedures are required by 180 NAC 21. The model procedures in this regulatory guide are generic. You must write procedures that are specific for your facility. By using the sections of this guide that apply, you may create your unique set of operating and safety procedures. This guide may also be used to develop operating and safety procedures for facilities with mobile services. Although other operating and safety procedure formats are acceptable, at least the information contained in 180 NAC 21-007.03 must be included in your operating and safety procedures.

These operating and safety procedures should be reviewed annually for content and implementation. These procedures must be made available to each individual operating dental x-ray machines [see Appendix A]. Individuals who are sole practitioners and sole operators and who are the only occupationally exposed individuals are exempt from 180 NAC 21-007.03 and do not have to maintain operating and safety procedures.
I. Sample Operating and Safety Procedures

OPERATING AND SAFETY PROCEDURES FOR

(name of facility)

These are procedures that will minimize radiation exposure to patients and employees. They are provided to comply with rules enforced by the Nebraska Department of Health and Human Services (DHHS), Office of Radiological Health. The certificate of registration contains conditions and restrictions that apply to the use of the x-ray machines in this facility. These rules are available for your review at (specify location) [See 180 NAC 21-007.05B].

The Radiation Safety Officer (RSO) for this facility is (specify name). The RSO has the responsibility and authority for assuring safe radiation practices and serves as the contact person between this facility and DHHS. Direct all your questions or concerns on radiation safety to the RSO [See 180 NAC 21-007.01B].

A. Operator and Patient Safety

1. Credentialing Requirements for Operators of Dental X-ray Machines


Licenses for dentists and dental hygienists can be found at (specify location).

Documentation of x-ray training for dental assistants can be found at (specify location).

2. Individual Monitoring Requirements

Individuals who operate only dental x-ray machines are exempt from individual monitoring requirements [See 180 NAC 21-003.06].

3. Holding of Patients and/or Film

a. Film holding devices must be used when techniques permit. [See 180 NAC 21-007.09E].

b. Do not hold the tube housing and the support housing during an exposure [See 180 NAC 21-007.09d].

c. If it becomes necessary for an individual to hold a patient or film, the holder should not be pregnant. They should wear protective devices (e.g., lead aprons) and keep out of the direct beam.
4. Posting Notices and Instructions to Workers
   a. Read the "Notice to Employees" sign, NRH-3D. This notice is posted (specify location).
   b. The certificate of registration, operating and safety procedures, and any notices of violations involving radiological working conditions are located at (specify location). [See 180 NAC 21-007.05B]
   c. Your rights and obligations as a radiation worker are found in (specify location). [See 180 NAC 21-007.04C and 180 NAC 21-009]

5. Notification and Reports to Individuals
   If applicable, radiation exposure data for individuals must be reported to the individual. [See 180 NAC 21-008.02D]

B. Dose to Operators
   1. Occupational dose limits are found in 180 NAC 21-007.04A.
   2. If any employee is pregnant or becomes pregnant, she may voluntarily inform the RSO in writing of the pregnancy [See 180 NAC 21-007.04A2]. If the RSO is informed of the pregnancy, the facility must ensure that the dose to the embryo/fetus does not exceed 0.5 rem (5 mSv) during the entire pregnancy [See 180 NAC 21-007.04A2].
   3. Radiation Incident or Overexposure
      If you suspect there has been an excessive exposure or a radiation incident, immediately notify the RSO [See 180 NAC 21-007.04C, item 3].

C. Operation of the X-ray Machine and Film Processing
   1. Ordering of X-ray Exams
      No x-ray exams shall be taken unless ordered by name of dentist(s) [See 180 NAC 21-007.01A4].
   2. Operator Position during Exposure [See 180 NAC 21-007.09C]
      a. The operator must be able to continuously see, hear, and communicate with the patient.
      b. During the exposure, the operator must stand at least six feet from the useful beam or behind a protective barrier.
   3. Use of a Technique Chart [see Appendix B]
      Use of a technique chart aids in reducing the exposure to the operator and patient and it must be used for all exposures. The technique charts are displayed in the vicinity of the control panel of each x-ray machine and are posted or displayed electronically. [See 180 NAC 21-007.01A, item 3]
4. Use of Mobile or Portable Machines
   a. Mobile x-ray equipment is mounted on a permanent base with wheels and/or casters for moving while completely assembled. Portable x-ray equipment is designed to be hand carried [See 180 NAC 21-002].
   b. During the exposure the operator:
      (i) Must be positioned so that his/her exposure is as low as reasonably achievable (ALARA) (e.g. 6 feet or more away) [See 180 NAC 21-007.02]; and
      (ii) Should never be in line with the direct beam.

5. Film Processing [See Appendix B]
   a. Unexposed film is stored (describe location and procedures for storage).
   b. Films shall be developed by the time and temperature recommended by the x-ray film manufacturer. These specifications are posted at (specify location) [See 180 NAC 21-007.12A]
      (i) Check the temperature at the beginning of the work day. Do not process films unless the developer temperature is (specify temperature). Manual processing temperature should be checked throughout the work day.
      (ii) For automatic processors, run blank films through the processor at the beginning of the work day.
   c. Expiration dates on film and chemicals should be checked periodically. New film or chemicals should be rotated so the oldest are used first. Do not use films or chemicals after the expiration date.
   d. Chemicals will be replaced by (specify name). Chemicals should be replaced every (indicate frequency) or no longer than every three months [See 180 NAC 21-007.12B].
   e. Lighting in the film processing/loading area is provided under these conditions and should not be changed without authorization from the RSO:
      Filter type
      Bulb wattage
      Distance from work surfaces
   f. If you see light leaks around doors, ceilings, or other openings in the darkroom, notify the RSO.

7. Alternative Processing Systems
   Our facility uses (state alternative processing system). Processing will be done according to the manufacturer's recommendations, which are located in (specify location) [See 180 NAC 21-007.12D].
8. Quality Control
   a. All radiographic equipment is to be maintained in good working order. It is the responsibility of each operator to report to the RSO any repairs needed to maintain the equipment in good working order. Repairs are to be made as soon as possible. Records of repairs are kept (location of records).
   
b. Equipment performance evaluations [See 180 NAC 21-007.10]
      (i) Tests will be performed every five years by (name of service provider).
      (ii) Records of the test results are located at (location of records).

D. Inventory List [See Appendix D and 21-006.04F]
   An annual inventory of all radiation machines is maintained by (name of individual). The records and manuals are located at (specify location).

<table>
<thead>
<tr>
<th>Name of Records/Document</th>
<th>Regulation Cross-Reference</th>
<th>Time Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory of all Dental Radiation Generating Equipment Possessed</td>
<td>180 NAC 21-006.04F</td>
<td>5 Years after records is made</td>
</tr>
<tr>
<td>Receipt, Transfer, and Disposal of Each Radiation Machine Possessed</td>
<td>180 NAC 21-006.04D</td>
<td>Until termination of registration</td>
</tr>
<tr>
<td>Current Operating and Safety Procedures</td>
<td>180 NAC 21-007.03</td>
<td>Until termination of registration</td>
</tr>
<tr>
<td>Current 180 NAC 21</td>
<td>180 NAC 21-007.05B</td>
<td>Until termination of registration</td>
</tr>
<tr>
<td>Current Certificate of Registration (NRH-4)</td>
<td>180 NAC 21-007.05B</td>
<td>Until termination of registration</td>
</tr>
<tr>
<td>Notice of Violation From Last Inspection</td>
<td>180 NAC 21-007.05B</td>
<td>Until next on-site inspection</td>
</tr>
<tr>
<td>Documentation of Corrections of any Violations</td>
<td>180 NAC 21-007.05B</td>
<td>Until next on-site inspection</td>
</tr>
<tr>
<td>Equipment Performance Evaluation Tests</td>
<td>180 NAC 21-007.10B</td>
<td>Until next on-site inspection</td>
</tr>
<tr>
<td>Automatic and Manual Film Processing Records</td>
<td>180 NAC 21-007.12</td>
<td>1 Year</td>
</tr>
<tr>
<td>Alternative Film Processing Records</td>
<td>180 NAC 21-007.13</td>
<td>1 Year</td>
</tr>
<tr>
<td>United States Food and Drug Administration Variance</td>
<td>180 NAC 21-007.06R</td>
<td>Until transfer of machine or termination of registration</td>
</tr>
</tbody>
</table>
APPENDIX A

SAMPLE RECORD FOR INSTRUCTION OF INDIVIDUALS
IN OPERATING AND SAFETY PROCEDURES FOR

__________________________ (name of facility)

These procedures have been made available to each individual who operates the x-ray equipment on the
date(s) indicated [See 180 NAC 21-007.03].

_______________________________________________________________
(Signature of RSO) (Date)

Equipment Operator Statement:

I have read these procedures and agree to follow them.

_______________________________________________________________
(Signature of Equipment Operator) (Date)

_______________________________________________________________
(Signature of Equipment Operator) (Date)

_______________________________________________________________
(Signature of Equipment Operator) (Date)

_______________________________________________________________
(Signature of Equipment Operator) (Date)

_______________________________________________________________
(Signature of Equipment Operator) (Date)

_______________________________________________________________
(Signature of Equipment Operator) (Date)
APPENDIX B

SAMPLE DARKROOM REQUIREMENTS LOG
FOR CALENDER YEAR ______

Automatic processor (Model #, Serial #) __________________________________________

OR

Manual processing ______________________________________________________________

Developer temperature ________________________________

Chemicals replaced
(manufacturer's or chemical supplier's recommendations or every 3 months)

(initials)(date) (initials)(date)

(initials)(date) (initials)(date)

Darkroom light leak tests performed
(every 6 months) (initials)(date) (initials)(date)

Lighting checked in film processing/loading area:
filter type __________________________
bulb wattage __________________________
distance from work surfaces ______________

(initials)(date) (initials)(date)

Light leaks or related deficiencies noted (initials)(date)

(initials)(date)

Corrections of light leaks or related deficiencies (or attach service/work orders)

(initials)(date)

(initials)(date)
Appendix C

SAMPLE DENTAL TECHNIQUE CHART

CEPHALOMETRIC

<table>
<thead>
<tr>
<th>PATIENT SIZE</th>
<th>kVp</th>
<th>mA</th>
<th>TIME</th>
<th>SID</th>
<th>FILM/SCREEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PANORAMIC

<table>
<thead>
<tr>
<th>PATIENT SIZE</th>
<th>kVp</th>
<th>mA</th>
<th>TIME</th>
<th>SID</th>
<th>FILM/SCREEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

INTRAORAL

<table>
<thead>
<tr>
<th>ADULT</th>
<th>kVp</th>
<th>mA</th>
<th>TIME</th>
<th>SSD</th>
<th>FILM/SCREEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posterior Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bite Wing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHILDREN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anterior Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posterior Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bite Wing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## SAMPLE EQUIPMENT INVENTORY LIST

**ANNUAL INVENTORY DATE:** ___________________  

**FACILITY NAME:** ______________ (name of facility) ___________  

**REGISTRATION NO.:** XXX-XXXX  

<table>
<thead>
<tr>
<th>MANUFACTURER</th>
<th>MODEL NUMBER</th>
<th>SERIAL NUMBER</th>
<th>LOCATION (EX. : ROOM NO.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENNETT</td>
<td>HFQ-450</td>
<td>ABC-123</td>
<td>123</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>