

COMPLIANCE WITH MINNESOTA RADIATION RULES



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Why Are You Here?

Is it required? No...

Is it continued education? Maybe ...

Is it updating “old” information? Maybe...

Fear of an inspection? Maybe...

Compliance with requirements? **YES!!**

Before We Go Too Far...Definitions

- **Registrant** means:

A. a person having administrative control of any radiation-producing equipment except those specifically exempted under this chapter and who is legally obligated to register with the commissioner according to this chapter, **or**

B. **Service provider** is a person who is legally obligated to register with the commissioner as a service provider according to this chapter

Protection and Safety Definitions

- **Protection** means:
 - A. a policy and procedure that is a state of being kept from harm or loss; **or**
 - B. The state of being protected; something that protects someone or something.
- **Safety** means:
 - A. a concept that includes all measures and practices taken to preserve the life, health, and bodily integrity of individuals; **or**
 - B. to ensure the safety of workers necessary and beneficial for any organization.
 - C. Regulatory bodies such as OSHA mandate a variety of safety measures employers must take and the authority to impose fines if an inspection reveals a violation of these standards.

What is Necessary to Know?

- MDH Radiation Rules, Chapter 4732:
 - Registration of radiation-producing equipment
 - Policies and procedures for your facility
 - Quality Assurance Program (Radiation Safety Program)
- MN Statutes:
 - 144.121 X-ray requirements;
 - 144.989-993 “Health Enforcement Consolidation Act”

What is Necessary to Know?

- Minnesota Dental Rules, Chapter 3100-9500
- MN Statute #150A.01-150A.31,
- Dental Licensing Board requirements and Practice standards:
 - Dental Assistant
 - Licensed Dental Assistant
 - Dental Hygienist
 - Licensed Dental Hygienist
 - Dental Therapist

How Does This Effect What You Do?

- Patient Care and Dose Limits
- Radiation Safety and Protection
 - Changes fear to respect of radiation
 - Use of protective equipment
- Quality Assurance Program
 - Understanding Policies and Procedures for compliance with Chapter 4732



By Using Your Knowledge to...

- Understand patient needs
- Communication with the patient
- Diseases that cause changes
 - Paget's disease, osteoporosis, some medications lowers bone density
- Internet/social media information
 - Good or bad?
 - Fear or respect?

MN Radiation Rule Requirements

- Registration of x-ray equipment
- Radiation Safety Officer/Registrant Agreement
- Quality Assurance Program (radiation safety program)
- Protection methods -Aprons and Gloves etc.
- Staff training-Initially and as needed
- Shielding plans and placard
- Any manufacturer's recommendations to be included from the operator's manual.

Radiation Rule Requirements (continued)

- Verification MNSP registration anytime repair, testing or installing equipment is performed
- Testing of equipment- Frequency
- Testing of New equipment
- Testing Equipment performance evaluations
- Individual Monitoring, if applicable
- Annual audit-Annually
- Safety methods – Time, distance, shie

Radiation Rule Requirements (continued)

- Understanding the ALARA concept (As Low As Reasonably Achievable),
- Understand and use policies and procedures
- Use of aprons and gloves, if required?
- Policies and procedures for holding patients, image receptors or cassettes
- Use and understand your operating and emergency procedures
- Know and understand the dose limits in rule

Technique Charts Required

- Every facility with x-ray equipment must have and use a technique chart for all patient exposures
- Charts may be on paper or embedded in the computer
- All staff must be able to show inspector where they are and how they are used

Technique Chart Information

- Computer embedded charts **must be**:
 - Available by staff at time of exposure
 - Understandable for staff's exposure choice
(lights, anatomical notations, nothing available)
 - Exposure factors noted for future follow-ups (consistency)
- Paper charts **can be**:
 - Posted in the exposure "button" area
 - In a notebook in the exposure "button" area
 - Exposure factors noted for future follow-ups (consistency)

Dental Radiation Dose Information...

but not a technique chart

Radiation Type	Radiation Amount
Single Digital Bitewing	5 microsieverts
Digital Panorex	20 microsieverts
Full Set of Digital Bitewings (6)	30 microsieverts
Daily Background Radiation (food, air, water, cosmic rays)	8 microsieverts
Cross-Country Flight	30 microsieverts
Chest CT Scan	7,000 microsieverts

Comparison Chart for Old and New Exposure Dose Terms

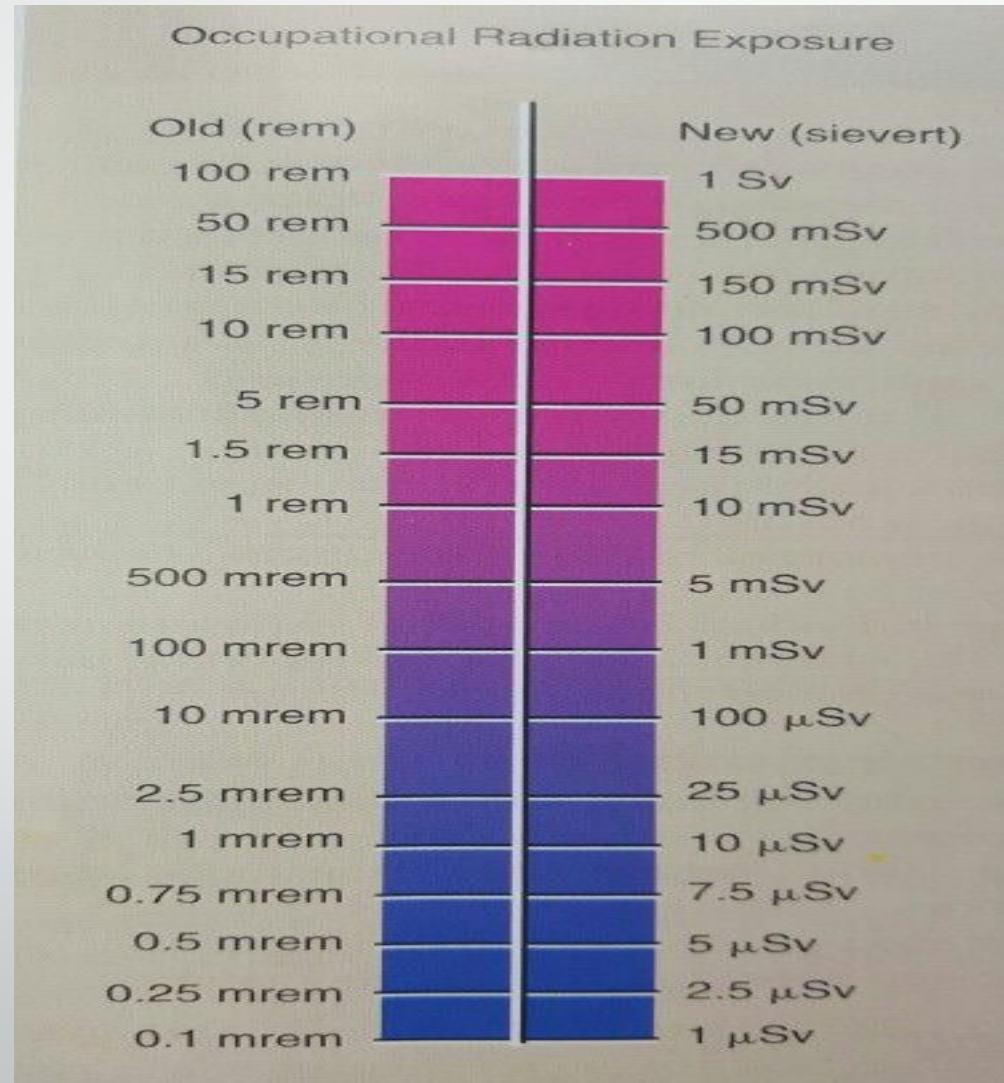


FIGURE 1-20 Scales for effective dose.

Service Provider Requirements

- **Must register** with MDH annually, whether they are located **in or out of Minnesota** to work in Minnesota (**exception**: in-house employed service providers work only)
- Registration number will look like **MNSP-1234**
- **Only If** qualified for shielding can they provide shielding plans
- **Must** list **all** equipment used to test your equipment with serial numbers and calibration date.

Note: If this information is not on report, the testing maybe classified as null and void.

PREPARING FOR A DENTAL INSPECTION



What happens next...

Panic? or **OK lets do it!**

This up to the facility, either you are ready or not...

Which do you prefer?

Routine Dental Inspection Information

- Routine dental inspections are due every 4 years.
- They are announced either by phone call or email letting them know they'll be in your area and will inspect then.
- Schedule your inspection convenient for both parties
- Rule states inspections can happen anytime during normal business hours.

Start of Inspection Process

- Receives MDH call to schedule inspection
- Date and time convenience for both parties
- RSO reviews facility process for compliance
- Inspector arrives, discusses the process with RSO
- Inspection is finished
- Inspector discusses findings with RSO
- Inspector leaves...now what???

What Are They Looking At?

- Registration current?
- Radiation Safety Officer, Who is it?
 - Single office or Satellite offices?
- Quality Assurance Program Manual (Radiation safety program)
- Equipment testing results installation and Equipment Performance Evaluations
- Technique Charts, where and use

What Are They Looking At? (Continued)

- Annual Audit Results
- Training documentation; on hire and as needed
- Utilization Log/Retake/Reject, if applicable
- Policies and procedures
 - Holding patients, image receptors, cassettes
 - Declared pregnancy
 - Individual monitoring use, if applicable
 - Protective garments; aprons, gloves, thyroid collars, goggles, etc.

Radiation Safety Manual (Quality Assurance Program Manual)

- Staff training, Initially and annually
- Topics:
 - Facility-specific and system-specific safe operating procedures
 - Operating and Emergency procedures for malfunctioning equipment or patient/staff issues
 - Quality assurance procedures
 - Radiation exposure hazards

Radiation Safety Manual (continued)

- Use of aprons and gloves
- Patient, imaging receptors, or Film holding
- Personnel dosimetry (Individual Monitoring)
- Radiation safety surveys
- Shielding plan/survey:
 - Drawing
 - Calculations
- Shielding Placard placed on a wall
 - Entire shielding plan or information where to find shielding information

Radiation Safety Manual (continued)

- Any restrictions of the operating technique required for the safe operation an x-ray system.
- Who is in the operatory when x-rays are taken?
- How is the control of access of the Panoramic or Cephalometric area being handled?

Policies and Procedures

- Quality Assurance Manual (Radiation Safety Manual):
 - Fog tests, if film based
 - Processor or monitor quality control tests
 - Image receptor or cassette tests, if film-based or CR/SDR
 - Equipment performance evaluations
 - Equipment installation tests

Policies and Procedures (continued)

- Employee & patient safety issues:
- Declared pregnancy policy
- Effects of radiation exposure to the human body and the embryo-fetus
- Projections where holding devices cannot be used
- Dose limit policy (individual monitoring)

Basic Dental Equipment Needs

Intraoral or Extra-oral Equipment:

- Technique charts; paper or computer generated
- Techniques for Pediatric or Adult patients
- Increased specialization may need more requirements from manufacturer's requirements

Panoramic/cephalometric units

Panoramic units

Cephalometric units

Specialized Radiographic Equipment

- New upcoming dental digital radiographic equipment:
 - Cone Beam Computed Tomography (CBCT)
(dose issues)
 - Panoramic 3 D
 - Hand-Held X-ray Unit
(locked and security issues)

Note: More on these newer pieces of x-ray equipment.

New Equipment Testing

- Installation of new equipment:
 - Installation calibrations of new diagnostic x-ray equipment, **whether dropped shipped or installed by service provider must be completed prior to use on patients!!!**
 - Equipment must be registered within **30 days** with MDH

Note: Suggest the MDH be notified that new equipment is being installed with date, manufacturer, model number and approximate date of installation completion.

Equipment Performance Evaluations

- Equipment performance evaluations must be:
 - Completed at intervals not to exceed 24 months (730 days),
 - Performed over the clinical range for the equipment according to parts 4732.1100-4732-1130 **and with**
 - Any recommendations from manufacturer added,
 - Report to RSO for review and verification,
 - Reports must be kept until the next inspection by MDH, for a minimum of 4 years (responsible for equipment from “cradle to grave”).

Equipment Performance Tests Completed by Service Providers

- Timer reproducibility and accuracy
- kVp accuracy
- Reproducibility-output
- mA linearity
- Filtration-half value layer
- Dose at the end of the cone

Inspection Testing Procedures

- Inspectors Testing Equipment:
- For all equipment:
 - Radcal 1015 radiation monitor
 - Mini-X kVp/time meter



Note: Inspectors may perform some tests depending on findings

Equipment Performance Tests for Facilities With Film Screen

- Film processing:
 - Crabtree test- Radiographic Quality Control
 - Step wedge test- Density test
- Fog test-daylight loader/darkroom:
 - Extraoral film
 - Coin test- periapical film

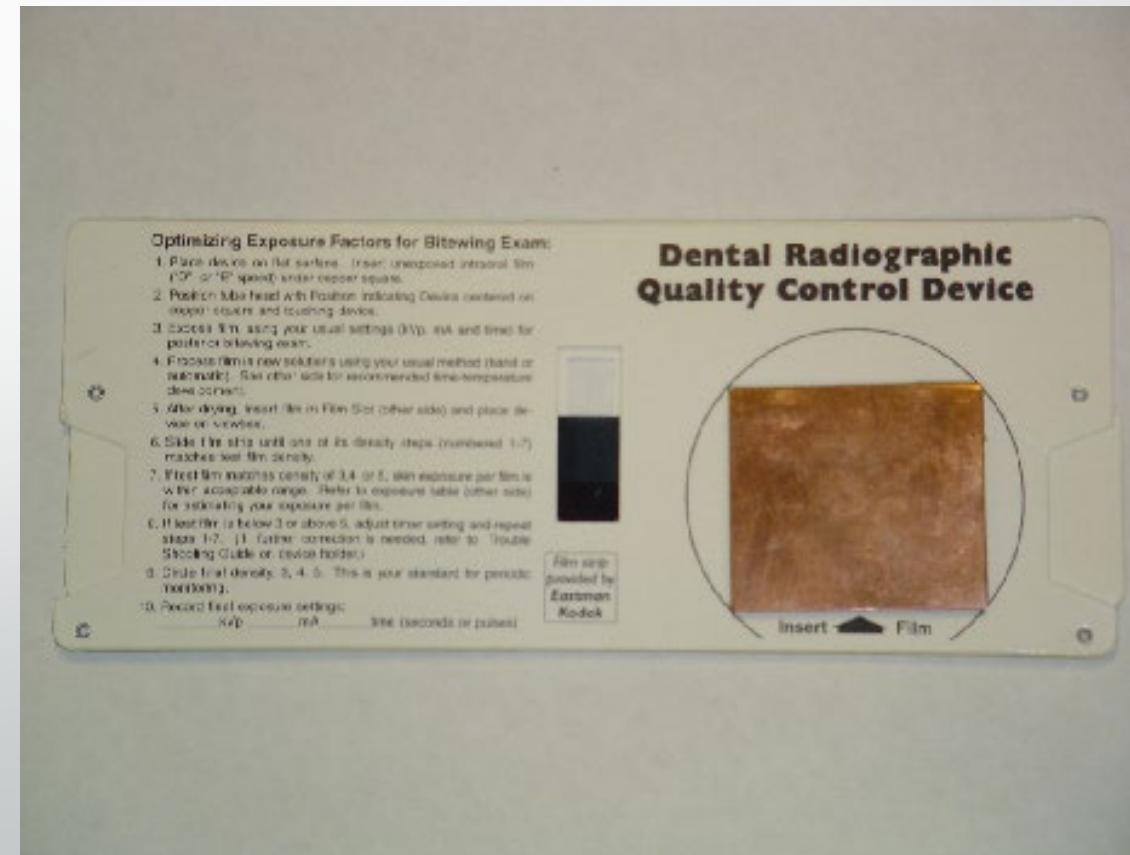
Note: Inspector may choose to do some testing depending on findings.

Film-Screen Testing Equipment

Step Wedge (11 step)



Dental radiographic quality control device (crabtree)



Diagnostic Equipment Performance tests (HVL)

Measured kVp	Millimeter of aluminum
60	1.5
70	1.5
71	2.1
80	2.3
90	2.5

Documentation Issues

- Is the documentation available?
- Is the documentation complete?
- Has the Radiation Safety Officer reviewed the documentation?
- Has the Administrator reviewed the documentation?

Records Review

- Quality Assurance Program Manual (Radiation safety manual)
- Equipment installation reports
- Equipment performance evaluations
- Quality control tests and evaluations
- Personnel dosimetry records, if applicable
- Staff training documents
- Staff credentials

Inspection Results

- **IF** violations found will be discussed with RSO
- Options on compliance discussed
- Given 30 days to complete compliance or provide correction plan to MDH
- Failure to respond in timely fashion may result in an Administrative Penalty Order.
- If **NO** violations found, “THANK YOU” and see you in 4 years!!

Lets take a short break, look at
the “toys” on the table

