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DEPARTMENT OF ENVIRONMENTAL PROTECTION



Office of Waste, Air, Radiation & Remediation

# **Final Rulemaking: Radiation Safety Requirements for Non-Healing Arts Radiation Generating Devices**

Environmental Quality Board Meeting

November 15, 2022

Tom Wolf, Governor

Ramez Ziadeh, P.E., Acting Secretary

# Statutory Requirements

- Radiation Protection Act of July 10, 1984 (P.L. 688, No. 147), 35 P.S. Sec. 7110.101, et seq.
- Section 302(a) of the Act authorizes the Board to “adopt the rules and regulations of the department to accomplish the purposes and carry out the provisions of [the] act.”
- Section 1920-A of the Administrative Code, April 9, 1929 (P.L. 177, No. 175), as amended, 71 P.S. Sec. 510-20.

# Background

- Radiological regulations in Chapter 227 for *non-medical radiation-producing devices* have not been updated since 2009, immediately after the Commonwealth became a Nuclear Regulatory Commission (NRC) Agreement State.
- Updates are needed to address technological advances and the resulting new devices that are not covered by the existing regulations.
- The devices are most common in the industrial field, including gauges, analyzers, and laboratory instrumentation.

# Purpose of Rulemaking

- Create a concise Chapter 227a for non-medical X-ray operations by separating out field radiography into Chapter 225.
- Incorporate current Conference of Radiation Control Directors (CRCPD) Suggested State Regulation (SSR) Part H and Part E into this new Chapter.
- Revise the definition of “accelerator or particle accelerator” in Chapter 228 to exactly match the U.S. NRC’s definition.

# Chapter 225 Revisions

- Makes requirements applicable to field radiography.
- Removes definitions that were added to the new Chapter 227a.
- Adds definition of radiographic X-ray systems to accommodate revisions to § 225.101a.
- Revises records retention requirements to 5 years to maintain consistency with other current regulatory provisions.

# Chapters 227 Revisions

- Chapter 227 is rescinded and reserved.
- Regulations from this chapter were moved to the new Chapter 227a for *non-healing arts radiation-producing devices*.

# Chapter 227a Revisions

- The new Chapter 227a includes all *non-healing arts radiation-producing devices* except field radiography.
- Incorporates regulations for new human-use individual X-ray security screening devices, which are primarily used to control contraband, drugs, and other illegal items from entering correctional facilities.
- Some examples of these devices are Analytical X-ray Gauging Equipment, Electron Microscopes, and X-ray Calibration Systems. Examples shown on next slide.

# Radiation-Producing Devices



**Electron  
Microscope**



**X-ray Analyzer**



**Radiography Unit**



**X-ray Security  
Scanner**



**Accelerator**



**Diffraction Unit**



**X-ray Gauge**

Photos: <https://en.wikipedia.org>



# Chapter 227a Revisions

- Incorporating regulations for new human-use individual X-ray security screening devices.
- These are used to control contraband, drugs, and other illegal items from entering correctional facilities.

# Chapter 228 Revisions

- Revised the definition of accelerator to match the federal definition.

# Costs and Compliance

- There are approximately 1,400 current radiation-producing device Registrants affected by this rulemaking.
- A small number have an added initial training cost for the individual X-ray security screening devices.
- DEP regional inspectors will provide support to these registrants.

# Public Comments

- IRRC and one member of the public submitted comments on the proposed rulemaking.
- Concerns included:
  - Duplicative requirements
  - Definitions of terms not used and substantive language added to definitions
  - Incorrect cross-references
  - Specifying an increase of radiation exposure

# Public Comments (cont.)

- Records required and retention period
  - 5-year retention period added for uniformity
- Registrants demonstrating compliance
  - Performance evaluation added to § 227a.21
  - Clarified § 227a.22(5) on how compliance is determined during inspections
- Security device training requirement excessive
  - Training not excessive because operators unlikely to have any previous training

# Conclusion

- With continuous advances in non-medical X-ray devices, updating the radiological health regulations is vital for protection of workers and the public.
- DEP and the Radiation Protection Advisory Committee (RPAC) have worked together since early 2019 to develop these regulations.

# Recommendation

- DEP recommends that the Board adopt this final rulemaking.
- The final rulemaking would take effect 90 days after publication in the *Pennsylvania Bulletin*.



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