

**3701:1-66-16 Security screening systems.**

In addition to the applicable rules in Chapters 3701:1-38 and 3701:1-66 of the Administrative Code, handlers of security screening systems shall comply with the following:

(A) Definitions for the purpose of this rule:

- (1) "Ambient dose equivalent area product (ADAP)" shall be determined using the American National Standards Institute publication "ANSI/HPS N43.17-2009 Radiation Safety for Personnel Security Screening Systems Using X-Ray or Gamma Radiation."
- (2) "Interlock" means a device preventing the start or continued operation of equipment that could cause a radiation hazard.
- (3) "Mode of operation" means a selectable set of technique factors or machine settings that is pre-determined by the manufacturer for a specific purpose.
- (4) "Scan" means the operation necessary to produce one image (e.g., front view) from one radiation source. One radiation source simultaneously producing multiple images also constitutes one scan. Two sources simultaneously producing two images constitute two scans. In some cases several scans may be required for a single screening of the subject.
- (5) "Screening" means the sum of radiation exposures or scans necessary to image objects concealed on all sides of the body as intended by the system design under normal conditions:
  - (a) For backscatter systems a screening typically consists of four scans, one from each side.
  - (b) For transmission systems a screening typically consists of one scan.
  - (c) For portal systems a screening consists of a complete pass through the inspection zone.
- (6) "Security screening system" means radiation-generating equipment used for the sole purpose of screening an individual who is in custody of a law enforcement agency to identify contraband items that would present a security threat within a secured facility perimeter.
- (7) "Technique factors" means the x-ray settings including:
  - (a) The peak kilovoltage applied to the x-ray tube;
  - (b) The electric current passing through the x-ray tube; and
  - (c) The scan time.

(B) Security screening systems shall meet the following equipment standards:

- (1) Indicators that light only when a scan is in process shall be provided and clearly

visible to all security screening system operators and anyone approaching the restricted area.

- (2) Power to the system shall be controlled by a key switch.
  - (3) A device to terminate x-ray exposure at any time during a scan.
  - (4) Access panels to x-ray source and detector shall be provided with at least one safety interlock.
  - (5) Operational safety interlocks must terminate the x-ray exposure in the event of any system problem that could result in abnormal or unintended radiation emission.
  - (6) Following any premature termination, the security screening system must prohibit resumption of x-ray generation until the normal control sequence is reset for a new scan.
  - (7) Equipment designed to control the exposure output using multiple modes of operation shall indicate the selected mode prior to each scan.
  - (8) Technique factors may not be adjustable and shall be preset by the manufacturer for each mode of operation.
  - (9) A means shall be provided to terminate the exposure at a preset time interval or exposure.
  - (10) When the x-ray tube is operated at its maximum rated tube current for the maximum kilovoltage, the leakage dose shall not be greater than 2.5 microsievert (0.25 millirem) in any one hour at any point thirty centimeters from any external surface.
  - (11) The primary x-ray beam shall be attenuated by at least one millimeter of aluminum- equivalent total filtration.
- (C) Handlers of security screening systems shall comply with the following administrative and radiation safety requirements:
- (1) No individual shall be exposed to the useful beam unless authorized by a law enforcement agency for security benefit. No individual shall be exposed to the useful beam for demonstration or frivolous purposes.
  - (2) The individual responsible for radiation protection shall ensure that all operators are trained in the safe operation of the security screening systems.
  - (3) Any radiation-generating equipment that does not meet the provisions set forth in this rule shall not be used to irradiate individuals unless the director determines that the continued use will not pose a radiation risk and arrangements have been made to promptly correct the deficiency.
  - (4) The handler shall follow the manufacturer's recommended maintenance schedule.
  - (5) Radiation-generating equipment shall bear a warning label on the control panel or by the exposure switch which cautions individuals that radiation is produced when it is energized.

- (6) All position locking, holding, and centering devices on radiation-generating equipment components shall function as designed by the manufacturer.
- (D) Handlers of security screening systems shall comply with the requirements of rule 3701: 1-66-04 of the Administrative Code, except for paragraphs (B)(8), (B)(15), (C) and (D)(5). In addition, the written quality assurance program shall include the following:
- (1) Policy prohibiting the frivolous use of security screening systems where no security benefit is to be derived.
  - (2) Policy requiring individuals undergoing screening to be positioned facing away from the source of radiation when using transmission security screening systems.
  - (3) Policy prohibiting the exposure of pregnant individuals.
  - (4) Policy prohibiting the exposure of minors.
  - (5) Policy that operator training must follow the topics listed in the "Personnel Training" section of the American National Standards Institute publication "ANSI/HPS N43.17-2009 Radiation Safety for Personnel Security Screening Systems Using X-Ray or Gamma Radiation."
  - (6) For general-use full-body security screening systems capable of delivering a maximum effective dose less than or equal to 0.1 microsievert (ten microrem) per scan: policies and records to show that administrative controls are applied to limit the number of screenings received by any individual such that the reference effective dose shall not exceed:
    - (a) 0.25 microsievert (25 microrem) per screening; and
    - (b) Two hundred fifty microsievert (twenty five millirem) over any twelve month period.
  - (7) For limited-use full-body security screening systems capable of delivering a maximum effective dose greater than 0.1 microsievert (ten microrem) per scan: policies and records to show that administrative controls are applied to limit the number of screenings received by any individual such that the reference effective dose shall not exceed:
    - (a) Ten microsievert (one millirem) per screening; and
    - (b) Two hundred fifty microsievert (twenty five millirem) over any twelve month period.
  - (8) For general-use partial-body security imaging systems capable of delivering a maximum effective dose less than or equal to 0.1 microsievert (ten microrem) per scan: policies and records to show that administrative controls will be applied to limit the number of screenings received by any individual, such that:
    - (a) The ADAP shall not exceed 0.03 microsievert per square meter (three microrem per square meter) per scan; and
    - (b) The total number of scans received at the facility in a twelve month period

does not exceed N, where N = seventy five microsievert per square meter per ADAP (seven thousand five hundred microrem per square meter per ADAP).

- (9) For limited-use partial-body security imaging systems capable of delivering a maximum effective dose greater than 0.1 microsievert (ten microrem) per scan: policies and records to show that administrative controls will be applied to limit the number of screenings received by any individual, such that:
  - (a) The ADAP shall not exceed three microsievert per square meter (three hundred microrem per square meter) per scan; and
  - (b) The total number of scans received at the facility in a twelve month period does not exceed N, where N = seventy five microsievert per square meter per ADAP (seven thousand five hundred microrem per square meter per ADAP).
- (E) Facility, design, shielding and restricted area requirements:
  - (1) A clearly marked restricted area shall be established. The dose outside of the restricted area may not exceed twenty microsievert (two millirem) in any one hour.
  - (2) A means shall be provided for the operator responsible for initiating the scan to maintain a full visual surveillance of the screening and restricted area.
  - (3) Engineering or administrative controls shall be provided to ensure that individuals do not reenter the scanning area from the exit while x-rays are being produced.
- (F) Reference effective dose limits as specified in paragraphs (D)(6) and (D)(7) of this rule and ADAP as specified in paragraphs (D)(8) and (D)(9) shall be determined using the American National Standards Institute publication "ANSI/HPS N43.17-2009 Radiation Safety for Personnel Security Screening Systems Using X-Ray or Gamma Radiation" by a health physicist or radiation expert or qualified individual designated by a radiation expert:
  - (1) Upon installation;
  - (2) Annually; and
  - (3) After any maintenance or change that may affect the reference effective dose or ADAP.
- (G) Screening systems capable of delivering an effective dose greater than ten microsievert (one millirem) per scan shall not be used for non-medical screening of human beings for security purposes.
- (H) The director may, upon application thereof or upon his or her own initiative, grant a variance to the requirements of rules as he or she determines is authorized by law, provided that the registrant shows to the satisfaction of the director that there is good cause for the variance, and that the variance will not result in any undue hazard or effect on the public health and safety or environment. The terms, conditions, and expiration of the variance shall be set forth in writing by the director. Failure to comply with the terms of the variance may result in immediate

revocation of the variance.

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Certification

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