Charleston County Sheriff's Office
Policy and Procedures Manual

Sheriff Carl Ritchie

9-35
SOTER RS Scanning Devices and Radiation Safety Program

☐ New
☒ Revised
☒ Reviewed

ACA Standards Reference:
CALEA Standards Reference:
NCCHC Standards Reference:
SCLEA Standards Reference:
SC Minimum Standards:

This policy dated 1/28/2025 replaces prior policies cited above and supersedes all previously issued directives.

I. Policy:

To promote the safety and security of the Sheriff Al Cannon Detention Center (SACDC) and the public, employees, inmates (new admissions, housed inmates, and inmates returning from areas outside the secure confines of the facility) volunteers, vendors, and visitors who require entry into the secure confines of the facility and/or who will have direct contact with inmates can be required to pass through the SOTER RS scanning machine with exceptions noted herein. For an individual to which an exception applies, he/she can be subject to a pat search; however, his/her property can be scanned with the SOTER RS.

Nothing in this policy prohibits the use of the SOTER RS on any inmate, employee, volunteer, bonds person, or their employee, vendor, or visitor while he/she is within the secure confines of the facility or prior to his/her departure from the facility.

Any individual, other than an inmate, who refuses to pass through the SOTER RS or refuses a search, will not be granted entry into the facility. In addition, any individual found to be concealing contraband on their person will be denied entry into the facility, will be subject to being detained, and to arrest under state statutes prohibiting the introduction of contraband into any correctional setting (S.C. Code of Laws, §24-7-155).

The SOTER RS will be used by trained staff and in compliance with manufacturer guidelines and applicable radiation safety protocols.

II. Definitions:

A. For purposes of this procedure, the word "deputy" applies to all agency employees with a certification classification of Class I, Class II, Class III, or Reserve Deputy, as defined by the South Carolina Criminal Justice Academy.

The following terms are used interchangeably; however, they carry guidance to specific employees based on the usage of the term:

1. Deputy, deputies, deputy sheriff, detention deputy, sworn employee, uniformed sworn employee, sworn administrative employee, and

2. civilian, non-sworn employee.

B. *Employee:* When used without further clarification, the term employee is inclusive of all agency members (sworn and non-sworn).

C. *Alara:* refers to an acronym used for "As-Low-as-Reasonably-Achievable."

D. *Body Scan*: refers to x-ray technology used to produce an image revealing the presence of contraband concealed on or inside of a subject.

E: *Body Scan Device*: refers to a stationary system for obtaining full-height radiographic images of a person to detect any kind of weapons, explosives, drugs, precious stones, and metals either concealed under the clothes, swallowed, or hidden in anatomical cavities of the human body, e.g., drugs in capsules without causing harm to the scanned person.

F: *Bystander*: refers to any person other than the individual being screened who is not directly associated with the operation of the system.

G: *Effective Dose*: refers to the sum of the tissue-weighted equivalent doses in all the tissues and organs of the body.

H: *Exposure*: refers to the amount of ionizing radiation that strikes living or inanimate material.

I: *General-Use System*: refers to a personnel screening system that delivers a reference effective dose equal to or less than 0.25µSv/micro-Sieverts (25 µrem) per screening as defined in the American National Standards Institute (ANSI), Standard N43.17- 2009. Given proper justification and certain restrictions, general-use systems may be operated without specific controls that would limit the number of individuals scanned or the number of scans per individual in a year

J: *Half-value Layer (HVL):* the width of a material required to reduce the air kerma of an x-ray or gamma ray to half its original value. This applies to narrow beam geometry only. With broad-beam geometry, a greater amount of scatter will reach the detector, falsely overestimating the degree of attenuation. It is used to quantify polyenergetic beams instead of linear and mass attenuation coefficients used for monoenergetic beams.

K: *Inspection Zone*: refers to a well-defined area demarcated by tape, paint, rope, etc. placed around the personnel security screening system where only the individual being scanned is authorized during the operation of the device. The purpose of the zone is radiation exposure control.

L: *Limited-use System:* refers to a personnel screening system that can deliver a reference effective dose greater than 0.25µSv/micro-Sieverts (25 µrem) per screening and will not exceed a reference effective dose of 10µSv/micro-Sieverts (1 mrem) per screening as defined in the American National Standards Institute (ANSI), Standard N43.17-2009. Limited-use systems require additional controls and documentation to ensure that annual

individual dose limits are not exceeded.

M: *Operator*: refers to any employee trained to operate the SOTER RS and whose responsibilities include at least one (1) of the following: initiating or stopping the scan, verifying the system is operating correctly, providing information and instructions to the screened individuals, and controlling access to the inspection zone. This does not include other employees, such as individuals who may be remotely viewing the image results, but who are not directly responsible for the other functions.

N: *Personnel Security Screening System*: refers to a system designed for the detection of contraband and weapons concealed on or inside a person (in the body of this standard also referred to as "screening system" or "scanning system" or "system").

O: *Radiation*: refers to the process in which energetic particles or waves travel through a medium or space. There are two (2) distinct types of radiation: ionizing and nonionizing. X-ray radiation is ionizing radiation.

P: *Radiation Safety Officer*: refers to a trained and designated officer responsible for maintaining the Radiation Safety Program. The Facility Radiation Safety Officer will be responsible for operator and training and will be the point of contact for all matters relating to the SOTER RS

Q: *Radiation Survey*: refers to the measurement of the x-radiation equivalent dose rate at the external surfaces of the body scan device, the personnel workstation(s), the boundaries of the working zone, and in adjacent rooms, if applicable.

R: *Scan*: refers to the x-ray technology used to produce an image revealing the presence of contraband concealed on or inside a subject.

T: *X-ray (also referred to as "x-ray radiation"*): refers to a form of electromagnetic radiation similar to light, but of shorter wavelength and capable of penetrating solids and ionizing gases.

IV. Procedure:

A. General Provisions:

1. Individuals entering the secure confines of the detention center and/or who will have direct contact with inmates may be subject to being scanned using the SOTER RS Scanning System to prevent the passage of contraband and to promote the penological interests of the

facility. This includes but is not limited to, new admissions, housed inmates, inmates and staff returning from areas outside the secure confines of the facility, visitors, vendors, bonds persons or their employees, and volunteers. In addition, an individual's property and items will also be subject to scan. The scan intends to promote the safety and security of the facility and others by preventing weapons, drugs, and prohibited items from being concealed on or in a person's body or on the property and entering the secure confines of the facility.

2. Nothing in this policy prohibits the use of the SOTER RS on any inmate, employee, bonds person, or their employee, volunteer, vendor, or visitor while he/she is within the secure confines of the facility or before his/her departure from the facility. Within legal parameters, all employees, inmates, volunteers, vendors, and visitors to the facility are subject to SORTER RS scans and pat-search at any time to promote the safety and security of the facility.

Note: Strip searches and body-cavity searches of inmates may be done consistent with the procedures outlined in the Searches and Contraband Policy. Strip searches of employees, visitors, vendors, and volunteers will only be done when reasonable suspicion exists and then only under the authority of the Chief Deputy or designee. Body cavity searches will not be authorized by employees, visitors, volunteers, or vendors.

3. Exceptions will be made for the use of the SOTER RS on individuals who may have conditions that prevent the use of the same. See, Procedure #4, "Restrictions on Scanning/Alternative Search Requirements", below, for information.

4. The SOTER RS does not reveal the identity or gender-specific images and, therefore, may be used for cross-gender scanning.

5. With the exception of new admissions that will be scanned, inmates returning from outside work detail, and housed inmates are subject to scan using the SOTER RS to detect the presence of contraband. Because the SOTER RS is non-evasive and does not require an inmate to remove his/her clothing, the SOTER RS can be used on inmates at any time. However, the ROTER RS can be used in the following circumstances upon the order and approval of a supervisor:

    a.) After an emergency event involving inmates to detect the presence of contraband, weapons, or other prohibited items;

b.) Anytime an inmate returns from areas outside the secure confines of the detention center;

c.) Before and upon release from disciplinary detention;

d.) During routine or planned security shakedowns;

e.) Anytime an officer has reasonable suspicion or has knowledge that an inmate(s) may be concealing contraband;

f.) As part of an investigation that involves contraband or the use of a contraband item;

g.) Prior to the placement of an inmate on suicide watch status to ensure he/she is not concealing any undetected contraband on his/her person;

h.) As ordered by a member of security staff at the level of Sergeant or above to promote the penological interests of the facility.

6. The SOTER RS will be installed by the original equipment manufacturer and will have three (3) scan levels: Level 1 (0.25uSv); Level 2 (1.75uSv); and Level 3 (2.25uSv). Level 2 will be the PCDC's default (pre-set) setting. All qualifying visitors, vendors, inmates, staff, and other individuals requiring entry into the secure confines of the facility MAY be scanned using the "Level 2"/Default Setting.

7. Notwithstanding language regarding the property of inmates, employees, volunteers, vendors, or visitors, any property located inside the SACDC can be scanned at any time for any reason.

B. Staff Training:

1. Every staff member authorized to conduct scans will be required to complete a course of instruction before being authorized to operate the SOTER RS. Proficiency training will be demonstrated after training. Refresher training will be provided annually.

2. At a minimum, training will consist of the following topics:

a.) Pre-operational checks;

b.) Operation of the SOTER RS

c.) Subject positioning;

d.) Interpretation of images;

e.) Procedures to be followed if the SOTER RS is damaged, malfunctions, or is inoperable;

f.) Radiation safety training as outlined in American National Standards Institute 8.2.5.b;

g.) Physical security procedures to prevent unauthorized use of the system;

h.) Use of relevant radiation meters and personnel dosimetry, if applicable;

i.) Control of inspection zones;

j.) Right of declared pregnant individuals; and

k.) Regulatory requirements and supervised practical operations.

3. Technique factors for each operating mode and the stated HVL of the system:

1.) Level 1 – Dose 0.25uSv; 100kV; 1.0mA; HVL 4.5mm

2.) Level 2 – Dose 1.75uSv; 160kV; 2.1mA; HVL 7.3mm

3.) Level 3 – Dose 2.25uSv; 160kV; 2.3mA; HVL 7.3mm

4. Records: Training records will be maintained by the Training Department, at a minimum, records will include the following information:

1.) Date of training;

2.) Outline of training or lesson plan; and

3.) Names of those employees in attendance.

C. Scanning Procedures:

1. Individuals can be subject to scan using the SOTER RS when entering the secure confines of the facility or when they will have direct contact with inmates, including staff, inmates, bonds persons, and their employees, visitors, vendors, and volunteers, and will be required to remove all property from their clothing if they are to be scanned. Individuals will be advised that their shoes can remain on their person.

2. Remove property and any bags, cases, boxes, etc. carried by any individual will be turned over to the operator and will be scanned.

3. Following removal of all property, the individual will be instructed to stand on the SOTER RS platform and to remain still for an eight (8) to ten (10) second period to accomplish an effective scan.

4. The individual will be scanned with the SOTER RS SmartScan (Random Scanning) Program active.

5. The entry/admission process will continue if no contraband or other anomalies are detected.

6. Should any person who is subject to the scan be concerned about radiation or the effects of the same, he/she will be provided a SOTER RS Scanning Information Fact Sheet (see Attachment A) that describes the low effect of the SOTER RS scanning device.

D. Restrictions on Scanning/Alternative Search Requirements:

1. Visitors, Vendors, Volunteers, and Staff:

a. The SOTER RS will not be used to scan visitors, vendors, volunteers, or staff who are known to be pregnant under any circumstances.

b. If a female is to be scanned and pregnancy is not obvious or known, the female will be asked if they are pregnant by the Operator.

c. A statement by the individual that she is pregnant or physical characteristics of pregnancy is sufficient evidence to assume the subject is exempt from a body scan.

d. Pregnant visitors, volunteers, staff, and vendors can instead be thoroughly pat-searched by a female officer. If a female is to be subject to a pat search, any property she may be carrying, including property contained in clothing, will be relinquished and will be scanned using the SOTER RS to determine if contraband is present.

2. Pregnant Inmates or Suspected Inmate Pregnancies:

a. Known and/or confirmed pregnant females will not be scanned using the SOTER RS.

b. Before scanning any female inmate, the operator performing the scan will observe the female for any signs of pregnancy. In addition, all female inmates will be asked if they are pregnant.

c. If the inmate reveals she is pregnant or has obvious signs of pregnancy, the inmate will not be scanned using the SOTER RS. Instead, the female inmate will be thoroughly pat searched by a female officer and will be subject to being scanned with a hand-held metal detector wand. Any property contained in the inmate's clothing or carried by the inmate will be scanned using the SOTER RS to detect the presence of contraband.

d. If there is any doubt as to the pregnancy status of an inmate, the health care provider will be contacted, and a pregnancy test can be administered.

e. If the health care provider confirms a female inmate is not pregnant, the inmate will be scanned using the SOTER RS, unless the inmate has another restriction noted in this section. If the test reveals an inmate is pregnant, a female officer will thoroughly pat search her, and any property contained in her clothing or carried by the inmate will be scanned using the SOTER RS.

3. Wheelchair-bound Individuals:

Individuals utilizing a wheelchair will not be scanned with the SOTER RS and will be subject to a thorough pat-down search by an officer of the same sex of the inmate and to a scan using a hand-held metal detector wand. Any property contained in the individual's clothing and any property the individual may be carrying will be relinquished to the operator and scanned using the SOTER RS.

4. Pacemakers and Medical Devices:

a. There is no FDA-published material indicating the use of the body scanner will adversely affect implanted medical devices, e.g., pacemakers or other medical devices.

b. A person who claims to have such a device may be asked to provide evidence that a device is fitted.

NOTE: Inmates claiming to have a medical device will be referred to the health care provider for verification.

c. The presence of a medical device should not prohibit the use

of the scanner unless other circumstances known to the health care provider or staff indicate otherwise. Should other circumstances indicate that the use of the scanner is not advisable; the individual will be thoroughly pat-searched by an officer of the same sex.

E. Refusal of Scan by an Individual:

1. Visitors, Volunteers, and Vendors:

If a visitor, volunteer, or vendor is approved to scan by a supervisor and refuses, he/she will be denied access to the facility and will be required to leave the premises. Similarly, an individual who is not eligible to be scanned (i.e., pregnant and wheelchair-bound individuals) and refuses an approved pat-searched will be denied access to the detention center and will be required to leave the premises. There will be NO exceptions.

a.) Volunteers approved to be scanned or searched and who refuse will be reported to the Programs Manager for appropriate action.

b.) Vendors approved to be scanned or searched and who refuse will be reported to the Chief Deputy for appropriate action consistent with the vendor's service contract.

c.) Visitors approved to be scanned or searched and who refuse to be scanned or searched will have their visitation privileges suspended for thirty (30) days.

2. Employees:

a.) All employees are hereby advised that they and their property are subject to being scanned using the SOTER RS before they enter the facility. "Property" includes issued clear plastic totes required to be used by employees and any property contained therein.

b.) The Housing and/or Processing Lieutenant or higher authority may order the random scan of employees using the SOTER RS at any time.

c.) If an employee is unable to be scanned due to any exception noted in Procedure #4, above, he/she can be pat searched by a

deputy of the same sex and can be scanned using a hand-held metal detector wand. The employee's property will, however, be scanned using the SOTER RS.

d.) The failure of an employee to comply will result in the denial of the employee's entry to the jail.

e.) The employee's immediate supervisor will be notified of the incident and the employee will be subject to disciplinary action, up to and including termination, consistent with Charleston County Sheriff's Office employee disciplinary policies. The Operator will complete an Incident Report to document the employee's refusal to submit to the supervisor. A copy of the Incident Report will be filed in the employee's file, and another will be disseminated through the chain-of-command to the Chief Deputy.

3. Inmates:

a.) Any inmate--new admission or existing inmate--that is eligible to be scanned and refuses a scan will be subject to disciplinary action for their refusal to obey an order and will be subject to being pat searched and/or strip-searched. Note: A strip search can be made of a new admission. For existing inmates, a strip search is warranted as the inmate's refusal establishes reasonable suspicion that the inmate may be concealing contraband.

b.) All searches including body cavity searches will be conducted in compliance with SACDC Policy Searches and Contraband Prevention.

c.) Should contraband be found concealed on any inmate, the procedures outlined in the above-referenced search policies will be implemented. The inmate will be charged with a disciplinary offense and may be subject to criminal prosecution.

F. Discovery of Contraband Due to a Scan or Search:

Should a scan or search reveal the presence of illicit drugs, illegal substances, weapons, or other illegal contraband items, the following procedures will apply. In all cases in which contraband is detected, a printed copy of the scan will be attached to an Incident Report noted below. Only a System

Administrator may copy and print a scanned image. The Incident Report will state the scan number assigned by the SOTER RS, the description, and location of the contraband on the body, and the operator's name.

NOTE: Should a scan reveal the presence of prohibited items that are not deemed illicit or illegal or are weapons, potential weapons, or drug paraphernalia, the employee, vendor, volunteer, or visitor will be advised that the item(s) cannot be brought into the facility and must be either secured in their vehicle or disposed of. Inmate possession of unauthorized or contraband items will be processed as outlined in Procedure #6. E., below.

1. Visitors: The contraband discovered will be retained as evidence and the individual will be detained. Deputies will be contacted to arrest the individual. The deputy responsible for the discovery will complete an Incident Report to accompany the evidence and will submit a copy of the Report for dissemination through the chain of command to the Chief Deputy.

2. Vendors: The contraband discovered will be retained as evidence and the individual will be detained. Deputies will be summoned to arrest the individual. The deputy responsible for the discovery will complete an Incident Report to accompany the evidence and will submit a copy of the Report for dissemination through the chain of command. The Chief Deputy and Security Major will be notified of the incident. The Chief Deputy or designee will contact the vendor's business and alert their officials that the individual has been arrested. Decisions as to the continuation of the vendor's contract will be made in consultation with the Sheriff and Charleston County Procurement. The vendor's employee will be restricted from access to the facility pending an investigation.

   NOTE: Employment decisions regarding the vendor will be made by the contract provider consistent with their policies and procedures.

3. Volunteers: The contraband discovered will be retained as evidence and the individual will be detained. Deputies will be contacted to arrest the individual. The deputy responsible for the discovery will complete an Incident Report to accompany the evidence and will submit a copy of the Report for dissemination through the chain of command to the Chief Deputy. The Programs Manager will be notified of the incident and the volunteer will be suspended pending an investigation or will be terminated.

4. Employees: The contraband discovered will be retained as evidence

and the individual will be detained. The officer responsible for the discovery will complete an Incident Report to accompany the evidence and will submit a copy of the Report for dissemination through the chain of command to the Administrator. The employee's supervisor will also be notified. The employee will be placed on suspension pending the results of an investigation.

5. Inmates: Existing inmates found to be in possession of contraband will be subject to disciplinary action consistent with procedures outlined in the *Inmate Disciplinary Procedures* Policy and may be subject to criminal prosecution. An exception may be made for new admissions who have items that are deemed unauthorized for possession but can be returned to the inmate upon release. These items will be inventoried and processed for storage with the inmate's personal property as outlined in the *Inmate Property* Policy.

G. Preservation of Images: All images will be stored on each SOTER RS scanning system and the networked central server. A System Administrator will delete images containing no detected contraband after six (6) months.

H. Scanner System Safety and Operating Parameters: The following provisions will be adhered to by all staff:

1. Upon becoming aware of any safety issues related to a body scan device, staff will immediately report any concerns they may have to their immediate supervisor. The supervisor will forward the employee's concerns to the Safety Coordinator/Radiation Safety Officer (RSO) or his/her designee.

2. Operators will responsibly use the scanning device, per this policy, and per the manufacturer's operating instructions and training.

3. The operator's manual for each body scan device will not be removed from the console of each unit.

4. During the operation of the body scan device, unauthorized persons (other than service personnel) will be prohibited from being allowed within the working zone (approximately three (3') feet out from each side of the base of the unit.) The working zone will be marked with a yellow safety line on the floor around the unit showing the safety area for any does greater than 20uSv (2mrem)/hour. The device will be considered operational when the red light is turned on and is illuminated on the unit.

5. Each body scan device will be marked with the following symbols:

"Attention! Refer to the Operation Documents! Caution! Dangerous Voltage."

6. All part removal and installation of scan device components will be completed by a service representative of the original equipment manufacturer and/or additional service contractors authorized to service the scanner.

I. Duties of Designated Personnel:

1. Chief Deputy or designee will:

a.) Make decisions concerning the location, placement, movement, or removal of any scanning devices with the coordinated support of maintenance personnel.

b.) Be responsible for implementing policies and procedures related to the security, operation, and usage of scanners under federal, state, and manufacturer regulations.

c.) Designate an individual to act as the Radiation Safety Officer (RSO) responsible for radiation safety. This RSO must have training and experience commensurate with the scope of the detention center's radiator safety program.

NOTE: The RSO is the SACDC Safety Compliance Specialist.

d.) Designate authority to approve and manage the day-to-day use of the system.

2. Safety Compliance Specialist/RSO will:

a.) Formulate, implement, and exercise staff supervision over the radiation safety program.

b.) Formulate, implement, and supervise an active, documented program to keep ionizing radiation doses to levels that are ALARA.

c.) Advise and assist agency command staff and affected personnel in all matters regarding radiation safety.

d.) Review current and proposed uses of the system for compliance with applicable regulatory requirements and guidance.

e.) Ensure radiation safety considerations are incorporated into system operating procedures.

f.) Review and approve the location/relocation of security screening systems to ensure compliance with radiation safety criteria and manufacturer's recommendations/ specifications.

NOTE: Other individuals such as maintenance personnel, inspectors, etc. may need to review the location/relocation of security screening systems to ensure compliance with other safety/engineering requirements, e.g., floor loading, electrical, and/or operational processes.

g.) Ensure that Radiation Surveys as outlined in Procedure #14, "Radiation Surveys", below, are performed in areas around security screening systems at least annually and ensure that all surveys are performed with appropriately calibrated equipment and documented accordingly.

h.) Ensure that area radiation dosimeters are in areas where scanning devices are present and are collected and processed properly.

i.) Maintain an inventory of radiation-producing devices.

j.) Maintain radiation safety records following applicable federal regulations and agency policies.

k.) In consultation with the Training Department, ensure radiation safety training is provided to all system operators and other personnel on an as-needed basis.

l.) Coordinate investigations of radiation safety-related system defects, damage, malfunctions, and violations of radiation safety procedures.

m.) Immediately terminate any unsafe activity involving personnel security screening systems.

n.) Ensure that all signs concerning radiation are conspicuously posted as per manufacturer and agency directives.

o.) Serve as point of contact for all matters relating to radiation

safety.

p.) Responsible for the area radiation monitor badge program at the facility, as outlined in Procedure #13, "Dosimeter Badges (Radiation Monitoring Badges)" below.

q.) Accompany auditors as they conduct inspections of X-ray equipment.

r.) Ensure that the radiation safety program is reviewed at least annually. This review will ensure that the program is adequate to ensure the safety of personnel and that the program is being followed. (NOTE: At least once every three (3) years, an external qualified expert (DHEC) will perform this review.)

3. Training will coordinate with the Safety Compliance Specialist to ensure that basic radiation safety training is conducted and attended by employees during basic training. Training will ensure that all training completed by employees is documented and kept in their PowerDMS file.

4. SOTER RS Operators will:

a.) Follow all applicable policies, procedures, regulations, and training as they relate to the SOTER RS, contraband detection and processing, required reports, and radiation safety.

b.) Immediately report any unsafe situation, damage to or malfunction of the security screening system, violation of regulations, or radiation safety procedures to their immediate supervisor and the Safety Compliance Specialist/RSO.

c.) Only trained and authorized personnel will operate the security screening systems by using their personal login information provided after the training program. The sharing of login information will not be permitted.

d.) Work with the Safety Compliance Specialist/RSO to ensure these procedures will promote safety to the user, the public, and scanned individuals. Both through radiation protection standards and illegal contraband detection. e). Maintain system and user maintenance as described by manufacturer's guidelines and regulations.

J. Daily Systems Checks:

1. Before operating the System, SOTER RS Operators will conduct a pre-check visual inspection of the complete device to ensure the following:

   a.) The emergency buttons (E-Stop) on the X-ray unit and the console are released.

   b.) There are no obstacles around the platform.

   c.) The cables on the unit are not bent or broken.

   d.) The device has no obvious damage.

   e.) All access panels are securely in place.

   f.) All accessible (external) cable connections are secure.

   g.) The device is turned on and the "POWER ON" light is illuminated.

   NOTE: If the system is not already on, the Operator will turn the key switch (clockwise) and will press the "ON" button. He/she will verify that the "POWER ON" light is lighted.

2. Operators will be required to document the completion of the pre-check inspection in a SOTER RS Logbook. Each device will have an accompanying Logbook for this purpose. Each team will begin the log with the following information:

   a.) Date and time;

   b.) Operator's name,

   c.) Team,

   d.) On-duty supervisor's names;

   e.) Any relevant information or orders shared during the daily briefing.

3. Damage/Malfunction:

   a.) If any damage or malfunction is found during a system pre-check, the Operator will immediately power the unit off and

will notify his/her immediate supervisor. The supervisor will be responsible for notifying the Safety Compliance Specialist/RSO.

b.) The Safety Compliance Specialist/RSO will ensure the affected device is placed "out of service" and will arrange for the appropriate service and necessary repair of the device.

c.) If the Safety Compliance Specialist/RSO believes that the damage or malfunction may compromise the safety of any persons in the immediate vicinity of the device, the emergency procedures outlined in Procedure #11, "Emergency Procedures, below, will be followed.

d.) Command staff and booking supervisors will be notified of any SOTER RS that is out of service and will be notified if emergency procedures are warranted.

K. Emergency Procedures:

1. If an emergency occurs, e.g., severe weather, possible damage to the devices, etc., the body scan device will be powered off and the appropriate personnel will be notified per the system check requirements.

   NOTE: If the control panel is not accessible or functioning, the main power breaker for the system must be shut off, and/or the unit should be unplugged immediately.

2. If a situation occurs in which staff suspects possible exposure to excessive or dangerous levels of radiation while operating the body scan device, the Operator will immediately notify the booking sergeant and the booking lieutenant. The processing lieutenant will assess the situation and circumstances. If a risk exists, the booking lieutenant will order the device to be powered off and the Safety Compliance Specialist/RSO will be notified.

3. If it is suspected that there was a potential exposure to excessive or dangerous levels of radiation, the booking lieutenant will ensure that the use of the body scan device is immediately discontinued, the affected unit is powered off, and the Safety Compliance Specialist/RSO will be immediately notified.

4. The Safety Compliance Specialist/RSO will be responsible for:

   a.) Scheduling any needed service repairs, including the completion of a Radiation Survey on the identified body scan device.

b.) If it is deemed safe to do so, ensure that the body scan device is surveyed in the condition it was when it became suspect.

c.) Clearing the scanning device to return it to normal operations if it is determined to be safe to do so by a service engineer and/or other qualified service contractors.

d.) If it is believed a radiation leak has occurred, ensure that a service engineer from the original equipment manufacturer calculates the approximate exposure (radiation intensity) of the person(s) possibly exposed.

L. Equipment Life Cycle Management:

1. The Department of Health and Environmental Control (DHEC) Radiation Protection Program requires that all radiation-emitting machines be registered. This registration ensures that each X-ray tube and the facility in which it is used are registered with the State. Registration is required before operating any radiation machine or modifying any facility in which an X-ray machine is to be used. The Safety Compliance Specialist/RSO and/or Chief Deputy will be responsible for ensuring that registration is completed, and that appropriate documentation is maintained regarding registration.

2. Installation:

a.) Security screening systems will be installed under the manufacturer's installation instructions. Only properly trained individuals will install security- screening systems.

b.) From a radiation safety standpoint, security screening systems must be installed in locations that are as far as reasonably possible from routinely occupied areas, subject to the operational requirements.

c.) Consideration must also be given to the direction of the X-ray beam relative to occupied areas, traffic flow, the number of scans per day, the effective dose per scan, and locations of existing walls or structures that can provide shielding.

d.) During installation, the area for the "inspection zone" for the system will be determined, measured, documented, and delineated.

3. Maintenance:

   a.) Only qualified, certified service personnel will be authorized to perform maintenance on any SOTER RS device. Maintenance records will be maintained under Procedure #15. A., "Other Recordkeeping", below.

   b.) Routine preventative maintenance will be performed per the manufacturer's recommended maintenance schedule. The Safety Compliance Specialist/RSO will ensure that routine preventative maintenance is completed, documented, and that all documentation is maintained for recordkeeping purposes.

   c.) The Chief Deputy or designee will ensure that a service contract is completed for the repair of any SOTER RS device outside of the recommended preventive maintenance schedule. The service contract will call for the repair of any device by qualified, certified professionals. A copy of the service contract will be made available for review, as needed.

4. Relocation/Transfer:

   a.) Security screening systems will not be relocated without appropriate approval from the Chief Deputy or designee.

   b.) Scanning devices will only be relocated and transferred when radiation safety, electrical safety, traffic flow, floor loading, etc., have been evaluated and deemed safe.

   c.) No scanning device will be transferred to another organization without the approval of the Sheriff. Any relocation or transfer will require prior DHEC approval and the appropriate registration with the DHEC Radiation Protection Program.

5. Disposal:

   a.) The disposal of any SOTER RS will be coordinated with the county to ensure proper disposal of all hazardous materials, such as cooling oil and lead shielding.

   b.) The Chief Deputy or designee must notify the DHEC's Radiation Protection Program Manager, in writing, when a SOTER RS device has been disposed of.

c.) Written notification must be supported by documentation from a registered service company that the radiation machine has been rendered inoperable, removed, or sold.

d.) The Chief Deputy or designee will be responsible for maintaining a copy of this notification and any acknowledgment from DHEC for recordkeeping purposes.

M. Dosimeter Badges (Radiation Monitoring Badges):

1. All SOTER RS scanning devices will be required to have a dosimeter badge (herein referred to as a Radiation Monitoring Badge) attached to the front of the operator station on the side facing the individual being scanned, and additional area monitors located in areas surrounding the unit routinely occupied during the scan; therefore, more than two (2) monitors may be required.

2. All Radiation Monitoring Badges will be analyzed and processed quarterly by a DHEC-approved radiation monitoring service.

3. All reports generated by the radiation monitoring service will be reviewed by the Safety Compliance Specialist/RSO and filed as a permanent record thereafter.

4. Any employee that has been found to intentionally tamper with any area-monitoring badge will be subject to disciplinary action up to, and including, immediate termination.

N. Radiation Surveys:

Surveys are required to verify the effective dose per scan, radiation leakage, the adequacy of the inspection zone, and other parameters specified by the manufacturer. Radiation surveys are required, as follows:

1. A formal radiation survey by a qualified and certified expert is required upon installation and at least once every twelve (12) months.

2. A formal radiation survey is also required whenever the system is relocated or a non-routine service involving the X-ray source, any X-ray collimating device, or X-ray shielding is performed.

3. Documentation of all completed surveys will be maintained by the Safety Compliance Specialist/RSO and will be produced, upon

request, by the command staff and any certified outside inspector, e.g., DHEC inspector. Survey records are required to be maintained for the life of the system. Survey records will include the following information:

a.) The system make model, serial number, and location.

b.) Surveyor name;

c.) Survey date and time;

d.) Instrumentation make, model, serial number, and calibration dates;

e.) Results of visual inspection of system safety features;

f.) Background measurements;

g.) Survey measurements;

h.) Survey diagram; and

i.) System parameters at which measurements were made.

O. Other Recordkeeping:

1. The Safety Compliance Specialist/RSO will maintain records of upgrades, modifications, maintenance, and repair for the life of the system.

2. For individuals who could receive radiation doses approaching 0.25 mSv (25 mrem) in a year, such as employees or frequent visitors, records will be maintained to demonstrate that the administrative control of 0.25 mSv (25 mrem) in a year is not exceeded. The Safety Compliance Specialist/RSO will maintain records. These records will include the following:

a.) The maximum estimated effective dose per scan or the actual effective dose per scan, if known;

b.) The number of times and dates when the individual was scanned;

c.) The cumulative effective dose to the individual over the past

twelve (12) months

ATTACHMENT A

SOTER RS SCANNING DEVICE INFORMATION FACT SHEET

Summary of Key Messages

- People are exposed to ionizing radiation every day.
- The ionizing radiation dose from the security screening process is much less than the average member of the public receives in one day from natural sources of radiation.
- Exposure to ionizing radiation may increase an individual's risk of developing cancer later in life; however, at these very low doses, the potential increase in risk is extremely small.

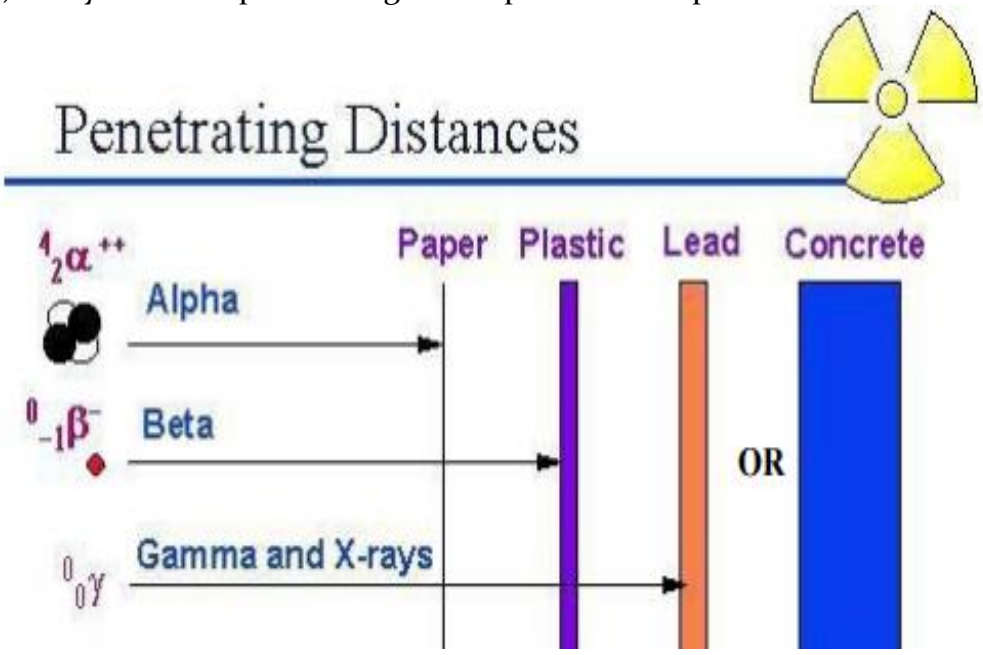
What is Ionizing Radiation?

Radiation is a form of energy. If radiation has sufficient energy to eject electrons from neighboring atoms, it is called *ionizing radiation*. This energy may be in the form of particles or electromagnetic waves.

What are the Types of Ionizing Radiation?

The main forms of ionizing radiation are *alpha* particles, *beta* particles, *gamma* rays, and *x-rays*. This screening system uses X-rays.

Gamma and *X-rays* are electromagnetic waves (like radio waves and visible light, but more energetic). They are more penetrating than alpha and beta particles.



How Can I be Exposed to Ionizing Radiation?

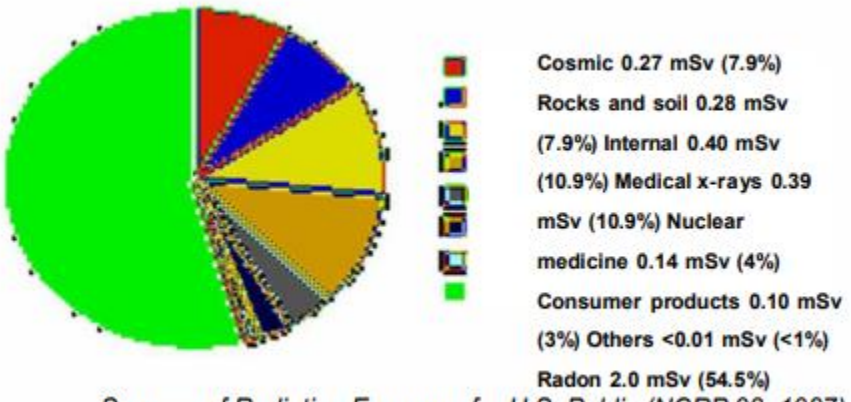
Ionizing radiation is an everyday part of our environment. Low levels of radiation strike the earth in the form of cosmic rays and solar emissions. All soils contain naturally occurring uranium and thorium, which are radioactive. Uranium and thorium decay to produce radon, a radioactive gas that seeps from the soil into the air we breathe. Additionally, small amounts of radioactive material are found in our food supply and many consumer products such as tobacco and smoke detectors. All of these sources of background radiation can vary widely depending on geographical location.

How Much Radiation Do We Typically Receive?

Everyone receives some radiation dose every day. Most of this exposure comes from natural sources, but a portion comes from man-made sources, such as medical procedures. The following chart provides some examples of everyday exposures:

Event	Cause	Dose	Dose µSv	Every
Everyday exposures	Average US annual radiation dose	360	3,600	Year
Everyday exposures	Natural sources in the US	300	3,000	Year
Sleeping next to someone	Exposure comes from the naturally radioactive potassium in the other person's body	2	20	Eight (8) Hours
Living in a masonry home	Stone and brick have natural radioisotopes in them	7	70	Year
Living on the Earth	We are living in a sea of radon. It is made from the natural decay of uranium and thorium in the soil, left over from the creation of the solar system. Radon is a rare gas that diffuses out of the soil and into the air. It contributes more than half our background exposure.	200	2,000	Year
Air Travel	30,000 feet above the ground you are closer to the ionizing radiation from the sun	0.5	5	Hour
Banana	Eating one (1) banana (the dose is from the K-40)	0.01	0.1	One (1) item
X-Ray – Dental	One (1) scan	50	500	One (1) scan
X-Ray – Chest	One (1) scan	100	1,000	One (1) scan

CAT Scan – Chest	One (1) scan	600	6,000	One (1) scan
Cosmic Radiation at Sea Level	(From outer space) Exposure depends on your elevation (how much air is above you to block radiation)	26	260	Year
Watching TV	Three (3) hours	1	10	Year
NCRP Annual Dose Recommendation	NCRP recommends that members of the general public (including special groups such as pregnant women and children) receive less than 250uSv (25mRem) effective dose per year from x-ray security screening.	25	250	Year
U.S. Capitol Building	Dose from standing in front of the granite of the United States Capitol building	85	850	Year



Sources of Radiation Exposure for U.S. Public (NCRP 93, 1987)

How Much Radiation Will I Receive from this Screening?

The dose from one (1) scan with this security screening system is approximate: 1.75 micro-Sieverts per scan OR the equivalent of 20 minutes of air travel at 30,000 feet

Will this Exposure to Radiation Make Me Radioactive?

No. Exposure to gamma rays or x-rays deposits energy in the body and will not cause you to become radioactive.

Where Can I Obtain More Information?

- Environmental Protection Agency, Understanding Radiation http://www.epa.gov/radiation/understand/index.html
- Centers for Disease Control and Prevention Radiation Emergencies

http://www.bt.cdc.gov/radiation/emergencyfaq.asp

- World Health Organization Ionizing Radiation Page: http://www.who.int/ionizing radiation/en/
- Health Physic Society Fact Sheets: http://hps.org/publicinformation/radterms/
- NCRP Report No. 93, Ionizing Radiation Exposure of the Population http://www.ncrppublications.org/
- Food and Drug Administration, Radiological Health Program of the United States http://www.fda.gov/cdrh/radhealth/