



Health Physics Society
Specialists in Radiation Safety

Security Screening Systems

There has been significant interest over the years on the topic of security screening systems with machines that generate radiation. Questions have been submitted to the Health Physics Society's (HPS) Ask the Experts (ATE) feature, especially pertaining to personnel staffing these security screening systems and people or pets passing through them.

This information sheet addresses some common concerns and provides factual information on security screening systems and the impact of these systems on their operators.

What is the risk to the personnel who are in close proximity to the system when the system is conducting security screening and generating radiation?

Operating a security screening system does not put personnel or those nearby at risk for several reasons: (1) the design of the system, (2) periodic inspections of the system, and (3) the correct use of the system by properly trained personnel. For more information, check out the Environmental Protection Agency's RadTown ["Radiation and Airport Security Scanning"](#) web page.

In what types of facilities are these radiation security systems used where system-operating personnel could be impacted?

There are many types of public and private facilities that use the radiation-generating systems as part of maintaining the security of the facility. These include airports, courthouses, and other places we might expect them, but they are also showing up at businesses, prisons, and even some high-end private homes. Bomb squads also routinely use x-ray machines.

What types of security screening systems that generate radiation are being used by personnel?

The specific type of system used is dependent on the mission at hand. Examples include technologies for backscatter x rays and x ray scans of hand-carried items, luggage, and contraband. The systems may be fixed at a facility or can be portable. As mentioned earlier, bomb squads use radiation-generating systems to evaluate unattended items and suspicious items for explosive devices.

Are the manufacturers of these systems required to follow any regulatory requirements?

Yes! See the [US Food and Drug Administration website](#) for details.

Has the technology for security screening changed over time?

Manufacturers of the radiation-generating systems for security screening purposes are continually improving the systems to reduce radiation exposure to personnel operating the systems. Systems made today will give a lower radiation dose than systems made a decade ago. That doesn't mean older systems are unsafe—it is most accurate to say that these systems have gone from being **safe** to being **very safe**.



Photo courtesy of Senior Airman Alyssa Van Hook



Photo courtesy of Staff Sgt. Nadine Y. Barclay

In addition, most states require periodic checks of x-ray systems used in public places, and they place restrictions on the radiation dose to which workers and members of the public can be exposed. Even older systems are still checked periodically to make sure they are safe and being operated in a safe manner by the facility's personnel.

What are the typical radiation dose levels per scan inside the security screening system when it is operating?

Radiation doses per scan for your checked luggage range between 0.01 mSv and 1.58 mSv, based on multiple passes through the systems. Screening of your carry-on luggage produces even less radiation. Check out [ATE question #12361](#) for more details.

To put these radiation doses in perspective—every day we are exposed to about 0.01 mSv–0.02 mSv from natural and man-made radiation. A chest x ray gives you approximately 0.01 mSv of radiation dose. To receive a radiation dose that would cause possible health effects, you would need to have hundreds of thousands of exposures inside the beam of the systems that give the highest radiation exposures.

Want to learn more? Check out our FAQs on [Workers and Security Screening!](#)

The Health Physics Society is a nonprofit scientific professional organization whose mission is excellence in the science and practice of radiation safety. Formed in 1956, the Society has approximately 3,500 scientists, physicians, engineers, lawyers, and other professionals. Activities include encouraging research in radiation science, developing standards, and disseminating radiation safety information. The Society may be contacted at 950 Herndon Parkway, Suite 450, Herndon, VA 20170; phone: 703-790-1745; fax: 703-790-2672; email: HPS@BurkInc.com.