Security Screening of Individuals with Ionizing Radiation

FACT SHEET 26-016-0617

What is a security screening?

A security screening is a process used by officials to determine a person's identity, access authorization, and possessions carried when presenting to an access point.

When does security screening involve exposure to ionizing radiation?

Many methods of security screening can be used to screen individuals entering secure facilities such as airports, government buildings, and prisons. One method uses low intensity ionizing radiation, usually x rays, to scan an individual's body and detect the presence of prohibited items such as guns, knives, explosives, or drugs.

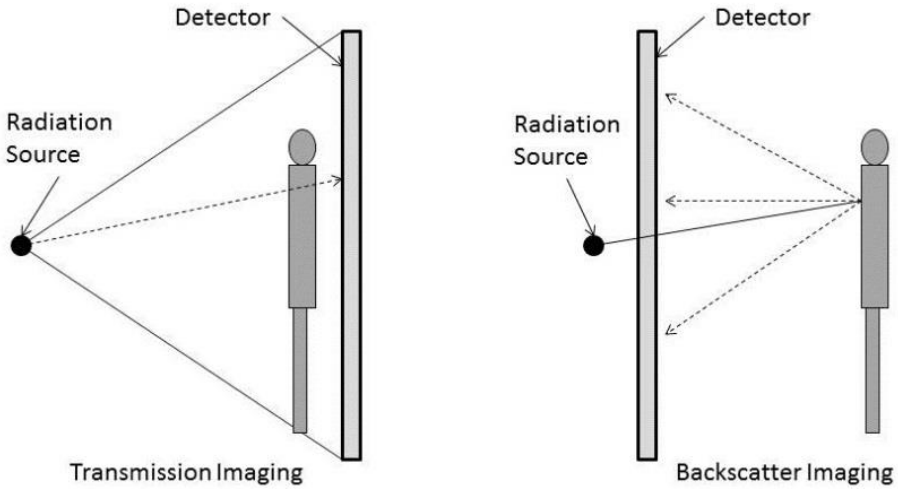
In addition, some systems that use ionizing radiation for screening of vehicles are designed to allow the vehicle's occupants to remain in the vehicle. When used in this way, these vehicle screening systems are also considered personnel screening systems.

Why is ionizing radiation used for screening?

While there are other screening technologies such as using non-ionizing radiation similar to that emitted by cellular phones or magnetic sensors, each method has strengths and weaknesses. Therefore, security screening operations often use more than one method to improve the ability to detect various items of concern. Systems that screen using ionizing radiation provide another tool to improve the security screening process.

How does a personnel security screening system work?

Systems designed for security screening of individuals typically produce an image of the individual on a monitor. There are two general types of imaging systems – transmission and backscatter. Transmission systems use a narrow fan-shaped radiation beam and detect the radiation that passes through the individual to produce images that look like medical or dental x-ray images. Backscatter systems use a very small "pencil" beam that sweeps across the individual and detect the radiation that is scattered (reflected) backwards from the surface of the body. These images are similar to transmission images, but often have a more photographic appearance.



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How much detail is revealed by the individual images?

In early versions of personnel security screening systems, the images were quite detailed and often raised concerns about privacy. A trained system operator needed to view the image and determine whether prohibited items were present. While such systems may still be in use in some places, most current systems use software to analyze the images. If items of concern are detected, an avatar is displayed to the security officer showing the general location of the item. The officer can then use another screening technique, usually a pat down, to determine whether a prohibited item is present.

How are personnel security screening systems used?

In most cases, the individual is asked to stand in front of the system with the feet slightly apart and hands above the head. The scan is initiated by the security officer and usually takes a few seconds. The individual is then asked to turn around and another scan is performed. In some systems, two radiation sources are used to scan both the front and back of the individual without the need to turn around.

Do I become radioactive if I'm screened?

No. Systems that produce images using ionizing radiation do not cause you or your clothing to become radioactive.

How many screenings can I receive?

Most of the systems used at security screening checkpoints are considered general-use systems. While the radiation dose may vary between systems, it would take at least 1000 screenings per year from a general-use system to reach the maximum annual radiation dose permitted from screening operations. This dose limit for screening is set at a very low level — one quarter of the recommended radiation dose limit which the Nuclear Regulatory Commission considers safe for members of the public. Generally, these devices are required to be inspected annually to ensure compliance with these limits.