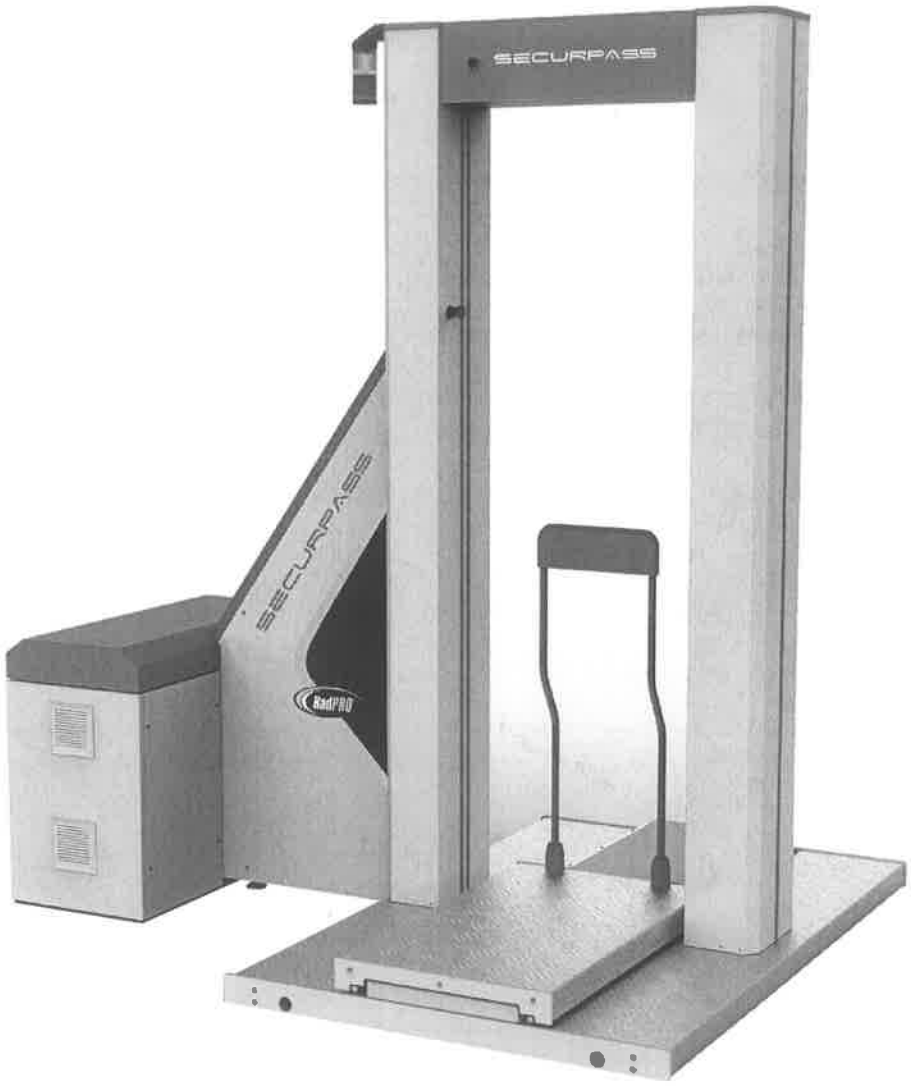
RadPRO SECURPASS®

Full Body Security Screening System



RadPRO® SecurPASS® Full Body Security Screening System

The RadPRO® SecurPASS® Security Screening System is designed to handle the high-level security needs of prisons, border crossings, jails, and government facilities. Based on unique patented technology, this low-dose X-ray screening system detects many types of illegal substances and weapons, both internally and on the body.

- Detects a wide range of dangerous and illegal substances
- Increases security while minimizing physical searches
- Low X-ray dose
- Able to image prosthetics to identify hidden weapons or contraband

QUICK SPECS

Scans in under 8 seconds

81.9 x 29.1 in (208 x 74 cm) scan area

< 0.25 uSv (0.025 mR) / per scan

RadPRO® SecurPASS® Full Body Security Screening System

FEATURES

- Open, obstruction-free gantry design
- User-friendly operation
- Detects contraband both internally and on the body
- Passenger-friendly inspection of shoes/clothing without removal
- Low X-ray dose
- System does not reveal skin surface or fine anatomical detail
- Hardened steel platform certified to 660 lbs
- Self-calibrating

APPLICATIONS

Civil Security	airports, seaports, railways, bus stations
Border Security	customs, police
Jail/Prison Security	prisoners, visitors, arrestees
High-Level Security	nuclear power plants, military premises, embassies

GENERAL

Scan Area	81.9 x 29.1 in (208 x 74 cm)
Scanning Time	under 8 sec
Pixels	3,408 x 3,320

GENERATOR

Configuration	Industrial Grade Monoblock (oil cooled)
Anode Voltage	150 kV
Imaging Options	3 user definable independent settings

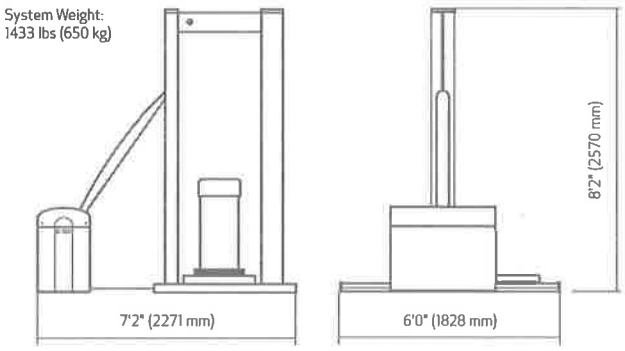
DOSE / INSPECTION

Standard Imaging Technique	< 0.25 uSv (0.025 mR) / per scan

IMAGING SYSTEM

Monitor	24 in HD monitor (portrait)
Local Storage	960,000 images RAID 1T Hard Drive, Mirrored with a 1T Backup Drive
Image Visualization Time	Real Time
Power	110 V, 30 amps / 60 Hz External line conditioner Uninterrupted Power Supply Internal Step-Transformer

The SecurPASS Full Body Security Screening System is able to image prosthetics to identify hidden narcotics, weapons, contraband, etc (Make-up, Medication, Personal Items, Special Needs Items, Electronic Devices, Sharp Objects, Sporting Goods, Guns/Firearms, Tools, Martial Arts/Self Defense Items, Explosive/Flammable Materials, Disabling Chemicals, Food/Drinks)



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MK-0268 Rev 3

Source of exposure	Dose in rem	Dose in sievert (Sv)
Exposure to cosmic rays during a roundtrip airplane flight from New York to Los Angeles	3 mrem	0.03 mSv
One dental x-ray	4–15 mrem	0.04–0.15 mSv
One chest x-ray	10 mrem	0.1 mSv
One mammogram	70 mrem	0.7 mSv
One year of exposure to natural radiation (from soil, cosmic rays, etc.)	300 mrem	3 mSv

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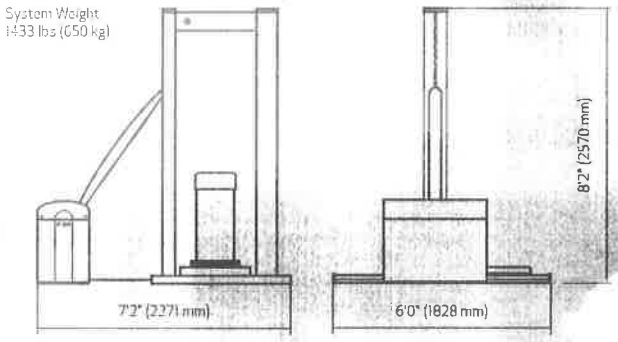

* Certain uses and applications may be prohibited in certain jurisdictions; end users are responsible for confirming that their intended use complies with applicable laws and regulations

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MK-0268 Rev 5

What are typical doses from medical procedures involving radiation?

Radiation dose can be estimated for some common diagnostic x-ray and nuclear medicine studies. It is important to note that these are only *typical* values. Radiation doses differ for each person because of differences in x-ray machines and their settings, the amount of radioactive material given in a nuclear medicine procedure, and the patient's metabolism.

The tables below give dose estimates for typical diagnostic x-ray and nuclear medicine exams. For comparison, in the United States we receive about 3.0 mSv (300 mrem) of exposure from natural background radiation every year. The effective dose listed is a comparable whole-body dose from the exam. The effective dose is given in mSv and mrem, the SI unit of measure of the effects of ionizing radiation on humans followed by the same dose in traditional mrem.

Typical Effective Radiation Dose from Diagnostic X Ray—Single Exposure

Exam	Effective Dose mSv (mrem)[1]
Chest (LAT)	0.04 (4)
Chest (AP)	0.02 (2)
Skull (AP)	0.03 (3)
Skull (Lat)	0.01 (1)
Pelvis (AP)	0.7 (70)
Thoracic Spine (AP)	0.4 (40)
Lumbar Spine (AP)	0.7 (70)

Exam	Effective Dose mSv (mrem)[2]
Mammogram (four views)	0.7 (70)
Dental (lateral)	0.02 (2)
Dental (panoramic)	0.09 (9)
DEXA (whole body)	0.0004 (0.04)
Hip	0.8 (80)
Hand or Foot	0.005 (0.5)
Abdomen	1.2 (120)

The following table shows the dose a patient could receive if undergoing an entire procedure. For example, a lumbar spine series usually consists of five x-ray exams. CT stands for computed tomography and is sometimes called a CAT scan.

Complete Exams	Effective Dose mSv (mrem)[1]
Intravenous Pyelogram (kidneys, 6 films)	2.5 (250)
Barium Swallow (24 images, 106 sec. fluoroscopy)	1.5 (150)
Barium Enema (10 images, 137 sec. fluoroscopy)	7.0 (700)
CT Head	2.0 (200)
CT Chest	8.0 (800)
CT Abdomen	10.0 (1,000)
CT Pelvis	10.0 (1,000)
Angioplasty (heart study)	7.5 (750) - 57.0 (5,700)[3]
Coronary Angiogram	4.6 (460) - 15.8 (1,580)[3]

Regulatory Dose Limits

A single high-level radiation exposure (i.e., greater than 100 mSv) delivered to the whole body over a very short period of time may have potential health risks. From follow-up of the atomic bomb survivors, we know acutely delivered, very high radiation doses can increase the occurrence of certain kinds of disease (e.g., cancer) and possibly negative genetic effects. To protect the public and radiation workers (and environment) from the potential effects of chronic low-level exposure (i.e., less than 100 mSv), the current radiation safety practice is to prudently assume similar adverse effects are possible with low-level protracted exposure to radiation. Thus, the risks associated with low-level medical, occupational, and environmental radiation exposure are conservatively calculated to be proportional to those observed with high-level exposure. These calculated risks are compared to other known occupational and environmental hazards, and appropriate safety standards and policies have been established by international and national radiation protection organizations (e.g., International Commission on Radiological Protection and National Council on Radiation Protection and Measurements) to control and limit potential harmful radiation effects.

Both public and occupational regulatory dose limits are set by federal (i.e., Environmental Protection Agency [EPA], Nuclear Regulatory Commission [NRC], and Department of Energy [DOE]) and state agencies (e.g., Agreement States) to limit cancer risk. Other radiation dose limits are applied to limit other potential biological effects with workers' skin and lens of the eye.

Annual Radiation Dose Limits	Agency
Radiation Worker – 50 mSv	(NRC, "occupationally" exposed)
General Public – 1 mSv = 100 mrem	(NRC, member of the public)
General Public – 0.25 mSv	(NRC, decommissioning and decontamination all pathways)
General Public – 0.10 mSv	(EPA, air pathway)
General Public – 0.04 mSv	(EPA, drinking water pathway)

Ask the Experts is posting information using only SI (the International System of Units) in accordance with international practice. To convert these to traditional units we have prepared a conversion table. You can also view a diagram to help put the radiation information presented in this question and answer in perspective. Explanations of radiation terms can be found here.