



Airport Passenger Screening and Health

The millimetre wave technology used for passenger screening in Australian international gateway airports does not pose a health risk.

Introduction

Security screening at airports has been common practice for many years, but has recently undergone significant changes.

The latest technologies for airport security screening are whole-body imaging machines. These machines operate by scanning X-ray (ionising radiation) or extremely high frequency radiofrequency (RF) radiation (non-ionising radiation) over the passenger's form.

These low output X-ray whole-body scanners or millimetre wave scanners provide alternatives to the traditional pat-down method of body searching and extend the detection capabilities of existing technologies. The machines are designed to detect weapons, explosives and other prohibited items concealed under clothing. Some of these technologies can also detect explosives that can be carried by passengers onto civil aircraft in a liquid, aerosol or gel form. These technologies are already in use in Australia, the United States, Canada and Europe.

The millimetre wave scanners are now the most common system deployed in airports around the world and are the only types used in Australian international gateway airports.

Millimetre wave technologies

Millimetre wave scanners use non-ionising radiation. Millimetre waves are radiofrequency radiation in the gigahertz bands, similar to that emitted by mobile phones. Clothing and other organic materials appear translucent to radiation of this type. These machines collect radio waves emitted by or reflected from the body to create a three-dimensional image.



Active millimetre wave scanner

These scanners are available in both active and passive forms. Active scanners transmit very low intensity millimetre waves from one or more antennas as they are rotated about the person being scanned. The reflected waves are then measured and reconstructed into a 3D image which is displayed to operators in a generic format that does not compromise passengers' privacy and shows no human anatomy. A passive scanner collects the millimetre waves emitted by any warm object such as a human body, and does not transmit any radiofrequency radiation onto the person being scanned. In both cases, objects beneath clothing will be displayed in sharp contrast to the body being scanned.

These scanners do not pose a health risk to passengers or operators and there are no known safety concerns to people with active implantable medical devices, such as pacemakers, as the amount of energy released during the scanning process for body scanners are much lower than that emitted from mobile phones.

X-ray backscatter technology

Backscatter X-ray (also known as Z Backscatter) technologies measures the X-rays that are backscattered from the object, in this case a person being screened.

The amount of radiation received during a scan is very low, particularly with some of the current generation of backscatter scanners. The dose received in one scan is 200 to 1000 times less than the amount received during a chest X-ray.

The radiation risk resulting from the use of backscatter scanners is very small, even for children or pregnant women. The ionising radiation from backscatter scanners is in the form of low energy X-rays, which will deposit most of their energy in the skin and underlying tissue. Considering the low radiation doses delivered by these machines, the resultant increase in the incidence of skin cancers within the population of scanned individuals from the use of backscatter scanners will be extremely low.