Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR)

Request for a scientific opinion:

Health effects of security scanners for passenger screening (based on X-ray technology)

1. Background

The possibility of introducing security scanners on the list of eligible screening methods and technologies for screening persons was first proposed to the Council and the European Parliament on 5 September 2008 on the basis of the positive vote of the Member States' aviation security experts.


The methods for passenger screening are laid down at point 1 of part A of the Annex to Commission Regulation (EC) No 272/2009 and are:

(a) hand search;
(b) walk-through metal detection (WTMD) equipment;
(c) hand-held metal detection (HHMD) equipment;
(d) explosive detection dogs;
(e) explosive trace detection (ETD).

Commission Regulation (EU) No 185/2010 of 4 March 2010 lays down detailed measures for the implementation of the common basic standards on aviation security. Point 4.1.1.2 of the Annex determines that passengers can be screened by a hand search or by a walk-through metal detector. Additional requirements on combining different methods in order to achieve effective detection are included in EU security restricted legislation.

Therefore, in the European Union, security scanners are currently not on the list of allowed methods for passenger screening. However, under the current system airports may deploy them:

(a) Under new equipment trials to temporarily replace the current primary screening system. Trials are authorised by the Commission for a maximum period of 30 months on the basis of the Member States' notification. Such

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1 Aviation Security Committee of 9/10 July 2008.
2 The EP Resolution (2008)0521 asked the Commission to: carry out an impact assessment relating to fundamental rights; consult the European Data Protection Supervisor (EDPS), the Article 29 Working Party and the Fundamental Rights Agency (FRA); carry out a scientific and medical assessment of the possible health impact of such technologies; carry out an economic, commercial and cost-benefit impact assessment.
notification includes information on the new method used, its duration and location, how it is intended not to negatively affect the overall level of security, how passengers are informed, etc. or,

(b) As a more stringent security measure\(^5\) in addition to the required screening methods and responding to higher threat risk as assessed at national level.

In the EU, some countries have already introduced security scanners under these rules. In the current international context of terrorist fears, such security scanners are being deployed at airports worldwide, especially in the USA which deploys currently several hundred security scanners. Russia has been using security scanners at airports since 2008 and will continue to deploy them more widely in the future. Other countries are either planning (e.g. Canada, Australia) or examining the possibility of introducing security scanners (e.g. Japan).

Following the Commission Communication COM(2010)311 on the use of security scanners at EU airports, an in-depth impact assessment was carried out by the Commission. It concluded that security scanners are an effective method for the screening of passengers and should be authorised for use at EU airports under certain operational conditions and detection performance standards.

Consequently, the Commission has recently proposed to add security scanners to the list of the method for the screening of passengers and this proposal was voted favourably in the Aviation Security Regulatory Committee of 6/7 July 2011. The proposal is currently under the scrutiny of the European Parliament and the Council (until 16 October 2011). In order to safeguard citizens' health and safety, at this stage, the Commission has proposed to only allow security scanners which do not use ionising radiation.

Four main security scanner technologies for passenger screening are currently on the market but this does not preclude other technologies from appearing:

<table>
<thead>
<tr>
<th>Body scanning security technology</th>
<th>Type of energy used and level of exposure</th>
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<tbody>
<tr>
<td>Passive millimetre-wave</td>
<td>No radiation emitted</td>
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<tr>
<td>Active millimetre-wave</td>
<td>Non-ionising radiation (24-30 GHz range), 60 to 640 µW/m²</td>
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<tr>
<td>X-ray backscatter</td>
<td>Ionising X-ray radiation between 0.02 and 0.1 µSv per screening</td>
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<tr>
<td>X-ray transmission imaging</td>
<td>Ionising X-ray radiation between 0.1-5 µSv per screening</td>
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While X-ray based security scanners are currently used in the UK and the USA, several Member States (e.g. Italy, France, Germany and Austria) prohibit the use of ionizing radiation for non-medical purposes.

The protection of workers and the general public from ionizing radiation is regulated under Directive 96/29/EURATOM. Article 6 of this Directive specifies the basic principles of radiation protection, among them that "Member States shall ensure that all new classes or

\(^5\) Article 6 of Regulation (EC) 300/2008.
types of practice resulting in exposure to ionizing radiation are justified in advance of being first adopted or first approved by their economic, social or other benefits in relation to the health detriment they may cause." According to the Directive, the use of X-ray security scanners are notified to the National Competent Authorities (Art. 3) and an authorization shall be required by the Member States (Art. 4). The Directive also sets cumulative dose limits for workers (Art.9) and for members of the public (Art. 13).


2. Terms of reference

The SCENIHR is asked:

1. To assess the potential health effects related to the use of all types of security scanners used for passenger screening which emit ionizing radiation.
2. If any effects are identified under 1, to quantify the risks and, if feasible, to estimate the additional number of cases of diseases that are expected to occur in Europe due to the use of this technology at EU airports, differentiating between the general public and exposed workers as indicated below.

In its assessment, the SCENIHR is asked to consider in particular the risk for populations that are regularly exposed to such technologies (e.g. frequent flyers (to be defined), air crew, security workers operating the scanners and other airport staff) and potentially vulnerable groups (e.g. pregnant women, children).

The SCENIHR should compare the relative risk of such security scanners using X-ray based technologies to other security scanner technologies on the market.

As health protection against ionizing radiation falls under the provisions of the Euratom Treaty, the SCENIHR is asked to consult in its assessment the Group of Scientific Experts referred to in Article 31 of the Euratom Treaty (Art. 31 GoE), advising the Commission on radiation protection matters.

3. Deadline

March 2012

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6 http://ec.europa.eu/energy/nuclear/radiation_protection/article_31_en.htm