REPORT

INSTITUT
DE RADIOPROTECTION
ET DE SÛRETÉ NUCLÉAIRE

Assessment of health risk of X-ray backscatter body scanners

Report DRPH 2010 - 03

RADIATION PROTECTION AND HUMAN HEALTH DIVISION (DRPH)

CONTENTS

1 INTRODUCTION

Following the attempted attack on 25 December 2009 on an Amsterdam-Detroit flight, the US National Security Council called for immediate installation of equipment that uses imaging techniques that are superior to metal detectors currently in use at French airports.

Two types of technology may be used at airports: scanners using non-ionising radiation (millimetre wave) or ionising radiation (measurement using X-ray deflection, or "backscatter").

In response to a request from the Ministry of Ecology, Energy, Sustainable Development and the Sea included in the appendixes, this report assesses dosimetric impact and health risk of X-ray backscatter scanners and formulates recommendations for authorities so that they can rule on which technology to use. Finally, this report gives information to provide passengers who may be subject to inspection by such scanners at airports abroad.

2 PRINCIPLE OF BACKSCATTER TECHNOLOGY USED TO CHECK FOR OBJECTS HIDDEN IN AN INDIVIDUAL'S CLOTHING

The technology of the X-ray backscatter body scanner detects objects, like ceramic knives, drugs or liquid explosives, hidden in clothing and not discernible by ordinary arch-type metal detectors currently used in airports. The backscatter scanner can produce photograph-quality images of its subject.

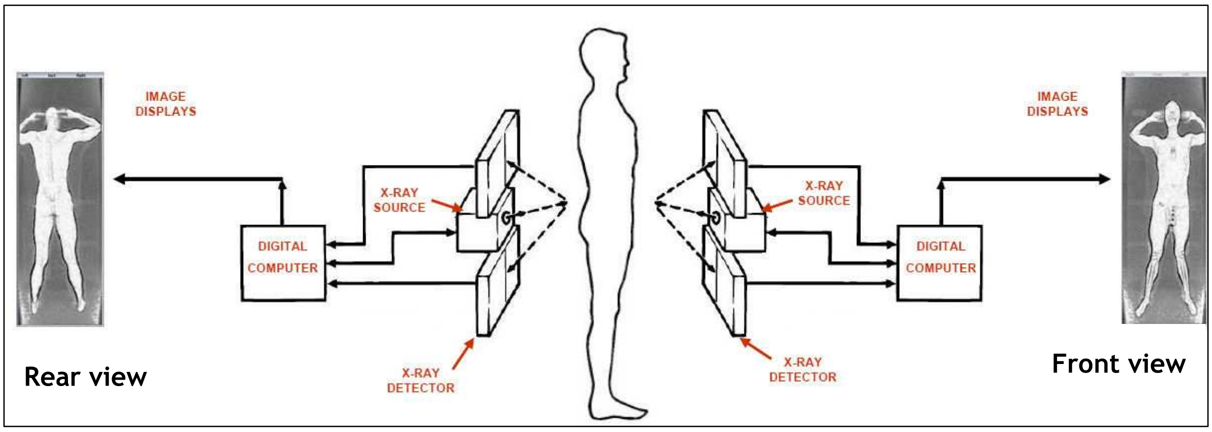

Figure 1: Functional diagram of Secure 1000 Single Pose X-Ray System (Rapiscan® systems)

The device uses a narrow X-ray beam that scans the subject from left to right and from bottom to top. X-rays emitted by a 50 kV generator are

- "backscattered", i.e., deflected, by the subject back to the scanner in variable quantities depending on material encountered. Plastic and skin backscatter X-rays at different angles while metal objects tend to absorb them. Backscattered X-rays are analysed by detector panels located on either side of the X-ray tube (Figure 1),
- or absorbed by the organism.

Assessment of the health impact of the device, the topic of the present report, requires a quantitative analysis of the fraction of incident radiation absorbed by the subject.

The system presented in Figure 1 is composed of two identical modules that simultaneously obtain front and rear views of the subject.

The X-ray source in the Secure 1000 Single Pose X-Ray System is finely collimated. Figure 2 shows the collimation device composed of a horizontal slit and a rotating chopper. Simultaneous movement of the slit from bottom to top (figure 3) and the rotating chopper (Figure 2) scan the subject in a few seconds with an X-ray pencil beam.

The entire device is inserted in a protective metal-clad enclosure.

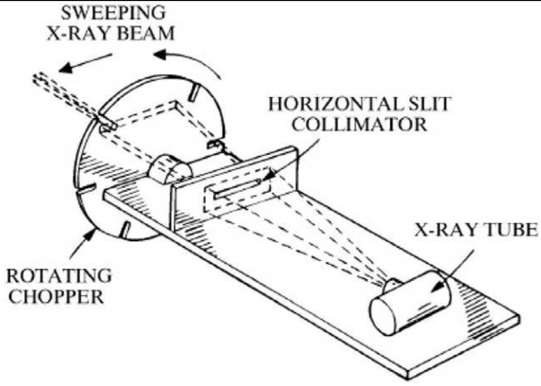

Figure 2: Collimation device on Secure 1000 Single Pose X-Ray System used to scan subject with X-ray pencil beam

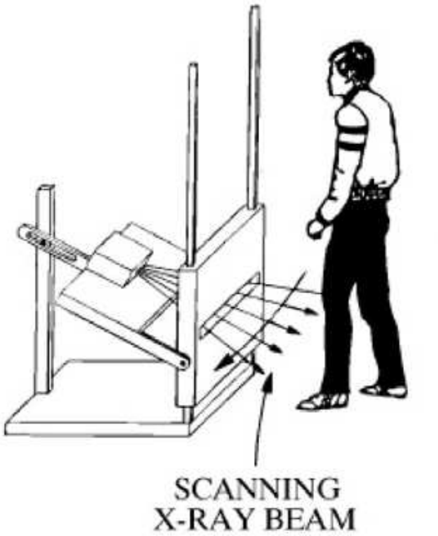

Figure 3: Concept of X-ray beam scanning system of Secure 1000 Single Pose X-Ray System

3 CHARACTERISATION OF X-RAY BEAM

3.1 BEAM GEOMETRY

The section of the X-ray pencil beam generated by the slit and chopper measures approximately 1.5 mm x 1.5 mm (0.06" x 0.06") at a distance on the order of 12.7 cm (5") from focal point of the tube.

If the subject to be inspected is located 30 cm from the external walls of the system (or 72.8 cm from the focal point), the beam section at this point is approximately equal to 8.5 mm x 8.5 mm.

3.2 BEAM ENERGY SPECTRUM

According to data provided by the manufacturer of the Secure 1000 Single Pose X-Ray System, based on a report dated 5 June 2008 by D.V. Farley, consultant in medical physics, the beam has the following specifications:

- high voltage (HV) = 47.3 kV (50 kV is the value adopted for this report)
- half-attenuation first layer = 1.0 mm Al
- beam current = 5 mA
- scan time = approximately 3 seconds for a complete image

IRSN used SPECTRUM Processor©[1] software to determine the energy spectrum of the beam for these parameters. It is a continuous spectrum from a few keV to 50 keV centred around 26 keV. Average spectrum energy is 29.2 keV (Figure 4).

[1] SPECTRUM PROCESSOR ©, A.J. Reilly and D. Sutton, IPEM 1997.

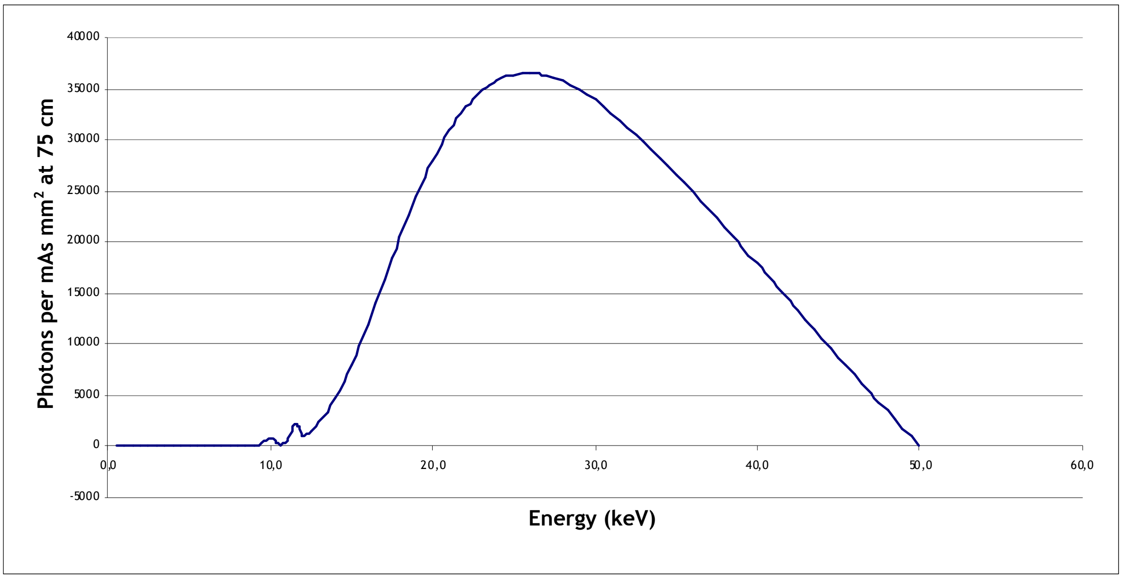

Figure 4: Energy spectrum of X-ray beam delivered by a 50 kV generator like that used by Secure 1000 Single Pose X-Ray System according to SPECTRUM Processor© software.

The percentage depth dose of the beam in water (which has the same properties as human tissues for ionising radiation) was calculated using the Monte Carlo technique. Since it has low energy, the beam attenuates quickly in tissues: at depths of 5 and 10 cm, it remains respectively at around 9% and 1% of surface dose (cf. Figure 5).

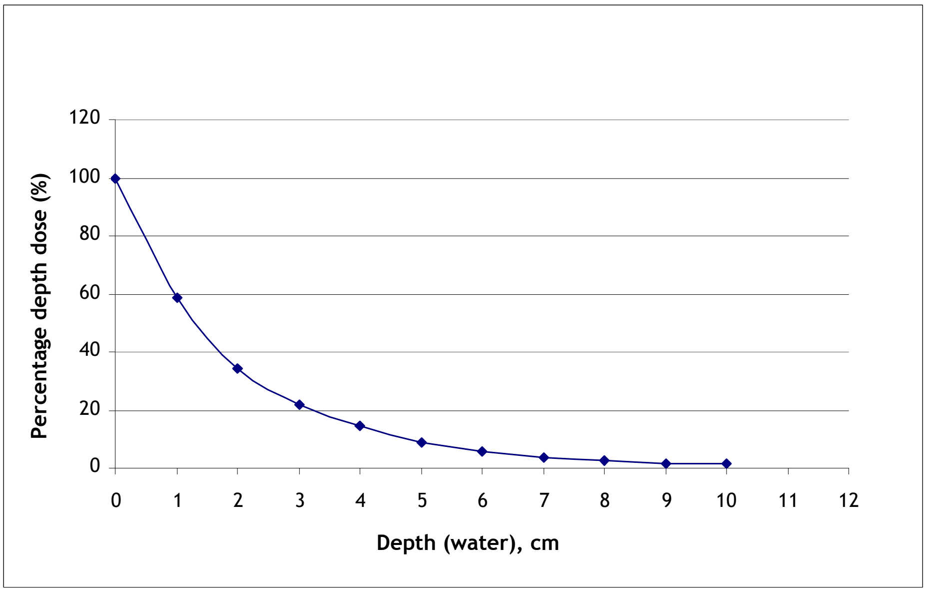

Figure 5: Percentage depth dose in water of X-ray beam produced by 50 kV generator like that used by Secure 1000 Single Pose X-Ray System, calculated using Monte Carlo technique (MCNP5 1.40).

3.3 EXPOSURE VALUES IN THE BEAM

Manufacturer data includes two types of measurements performed on the Secure 1000 Single Pose X-Ray System:

- measurements performed with a Victoreen 4000M+ detector at 72.8 cm from the focal point (or 30 cm from system walls) indicate an exposure rate equal to 29 milliröntgen/mAs (mR/mAs)[2];
- exposure in the air for an intensity of 5 mA and a scan time of 150 µs (corresponding to exposure time of 8.5 mm x 8.5 mm area of the subject) is equal to $29 \times 5 \times 150.10^{-6} = 22$ µR for all inspection points;
- measurements performed with a Radcal 9015 detector equipped with a 10x9-1800 chamber at 72.8 cm from the focal point (or 30 cm from system walls) indicate exposure for the subject equal to 5.75 µR for all inspection points.

Using international system units, the two exposure values are equivalent to air absorbed doses respectively equal to 0.19 µGy and 0.05 µGy for all inspection points.

Manufacturer values were compared with results obtained using two spectrum simulation software packages, SPECTRUM Processor© and XCOMP5[3].

Dose rates per mAs for a 50 kV X-ray beam with filtration equal to 1 mm of aluminium, like the one used in the Secure 1000 Single Pose X-Ray System, are shown in Table I as well as the absorbed doses in µGy in the air corresponding for all points in the inspected area.

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[2] The röntgen (R) is non-standard unit of measurement for exposure to ionising radiation still in use in the USA and Russia.

[3] Nowotny, R. and Hofer, A., XCOMP5, Program for calculating diagnostic X-ray spectra. RoeFo. Fortschr.Geb. Roentgenstr. Nuklearmed. 142, 685–689 (1985).

	X-ray beam: 50 kV / tungsten anode / 12°slope / 0 % ripple / 1 mm Al filter	
	SPECTRUM Processor©	**XCOMP5**
Average energy	29.2 keV	29.2 keV
Half-attenuation first layer	1.07 mm equivalent aluminium	1.11 mm equivalent aluminium
Absorbed dose in air at 75 cm	166.4 µGy/mAs	148 µGy/mAs
Absorbed dose in air at 72.8 cm (distance between focal point and subject to be inspected)	177 µGy/mAs	157 µGy/mAs
Absorbed dose in air at all points in the inspected zone at 72.8 cm[a)]	**0.13 µGy**	**0.12 µGy**

[a)] taking into consideration an intensity of 5 mA and a scan time of 150 µs.

Table I: Characteristics of 50 kV X-ray beam like the one in the Secure 1000 Single Pose X-Ray System and absorbed dose in air at all inspection points, per inspection, calculated using SPECTRUM Processor© and XCOMP5 software.

Table II summarises values of absorbed doses in air for a 50 kV X-ray beam like the one in the Secure 1000 Single Pose X-Ray System obtained using numerical simulation or manufacturer data.

	X-ray beam: 50 kV / 1 mm Al filter			
	Manufacturer data (Victoreen)	**Manufacturer data (Radcal)**	**SPECTRUM Processor simulation**	**XCOMP5 Simulation**
Air absorbed dose at all points in the inspected zone (**µGy**)	**0.19**	**0.05**	**0.13**	**0.12**

Table II: Summary of absorbed doses in air for a 50 kV X-ray beam like the one in the Secure 1000 Single Pose X-Ray System.

Considering the spread in values for the absorbed dose in air and uncertainties inherent in measurement and simulation, the highest value, or 0.2 µGy, will be adopted for the remainder of the report. The manufacturer chose the lowest exposure value (in röntgens) corresponding to an absorbed dose in air of 0.05 µGy.

4 DOSIMETRIC EVALUATION FOR AN INSPECTION

Dosimetric quantities representing radiological risk are “effective dose”[4] for whole-body exposure and “average absorbed dose” received by specific organs. IRSN calculated values using the absorbed dose in air and conversion coefficients found in publication 57 of the International Commission on Radiation Units and Measurements (ICRU).
The manufacturer RAPISCAN® calculated effective dose per inspection using conversion coefficients given in the ANSI/HPS 43.17 standard.

Table III gives values for effective dose and absorbed dose received by the most superficial organs and various other organs for an absorbed dose in air of 0.2 µGy for a complete inspection combining rear and front views calculated using ICRU conversion coefficients. Effective dose was also calculated using coefficients from the ANSI/HPS 43.17 standard.

[4] The effective dose is the weighted sum of the absorbed radiation doses in different tissues and organs of the body. This weighting takes account of both the relative danger from the radiation considered and also the individual radiosensitivity of each tissue and organ. The unit of effective dose is the sievert (Sv).

	X-ray beam: 50 kV / 1 mm Al filter Air absorbed dose: 0.2 µGy/inspection				
Organ	**Average absorbed dose to the organ (front view)[a] (µGy)**	**Average absorbed dose to the organ (rear view)[a] (µGy)**	**Average absorbed dose to the organ per inspection (µGy)**	**Effective dose per inspection (µSv)**	
				According to ICRU publication 57	**According to ANSI/HPS standard 43.17-2009**
Skin	0.13	0.13	**0.26**		
Thyroid	0.18	0.002	**0.18**		
Breast	0.19	0.01	**0.20**		
Lens of the eyes	0.24	0	**0.24**		
Testicles	0.22	0.008	**0.23**		
Bone marrow	0.01	0.03	0.04		
Ovaries	0.03	0.02	0.05		
Uterus	0.04	0.01	0.05		
Colon	0.05	0.01	0.06		
Whole body				**0.11[b]**	**0.07[c]**

[a] According to ICRU publication 57
[b] 0.085 µSv for the front view and 0.025 µSv for the rear view
[c] 0.05 µSv for the front view and 0.02 µSv for the rear view

Table III: Effective and average absorbed dose received by some organs and effective dose per inspection with Secure 1000 Single Pose X-Ray System. An inspection includes front and rear view.

Dose to a foetus at the start of pregnancy is estimated at 0.05 µSv.

Based on the adopted envelope data, i.e., 0.2 µGy, IRSN estimates the effective dose for an inspection (front and rear view) at approximately 0.1 µSv. Manufacturer data indicates 0.03 µSv per inspection. The lower value for the effective dose is explained by the manufacturer's choice to retain the lowest exposure value in röntgen units corresponding to an absorbed dose in air of 0.05 µGy.

The X-rays in the Secure 1000 Single Pose X-Ray System are presented by its manufacturer RAPISCAN® as “low energy X-rays” having very low penetration, as stated on its web site: “the X-rays penetrate only about 0.1 inch of the skin” or 2.5 mm. This is misleading since Figure 5 shows that at a depth of 5 cm, the dose is still equal to 9% of that of the skin. Compared with a conventional radiation beam (high voltage between 70 and 90 kV) where the percentage depth dose at a depth of 5 cm in the organism is on the order of 15 to 20%, the difference of penetration is only less than a factor of approximately two. For this technique to irradiate the organism only over a depth of several millimetres, it would require that the X-ray spectrum have lower energy, since, according to ICRU, “a low-penetrating photon is an energy ray less than approximately 15 keV.” This should be compared with the spectrum of Secure 1000, which rises to 50 keV. As a consequence, the dosimetric impact of the technique concerns not only skin but organs that are close to it.

Effective doses, respectively organ doses received per inspection by the *Secure 1000 Single Pose X-Ray System* are extremely low (less than µSv, respectively less than µGy). The effective dose is more than 1,000 times inferior to that for average natural irradiation in France (2,500 µSv/year). For purposes of comparison, the effective dose may be compared to the dose received for a chest X-ray (approximately 50 µSv) or a Paris-Beijing flight (approximately 75 µSv). Exposure of a passenger due to the inspection is equivalent to 1 to 2 minutes of high-altitude flight, or approximately 20 minutes of natural exposure in France. This corroborates the dosimetric estimates made by the manufacturer for effective dose. Doses absorbed by the organs were not given sufficient attention by the manufacturer who states that only the skin is exposed. Table III shows that other organs (thyroid, breast, lens of the eyes and testicles) receive a dose comparable to that of the skin (approximately 0.2 µGy).

5 DOSIMETRIC EVALUATION OF DIFFERENT EXPOSURE SCENARIOS

This may concern the following categories: the general public, inspection agents and aircrew. In the absence of information concerning conditions for inspecting aircrew, IRSN has not performed a dosimetric evaluation for this category.

5.1 GENERAL PUBLIC

The number of flights taken during a year varies greatly among the general public. In the absence of standardised data, IRSN can only define an envelope scenario of a passenger taking a daily round-trip flight, for example, Paris-Bordeaux-Paris. Annual effective dose delivered by inspections would be 80 µSv, comparable with the dose of cosmic radiation (which is also ionising radiation) received by the passenger during the flights, estimated at approximately 1 mSv.

5.2 INSPECTION AGENTS

An example of a Secure 1000 Single Pose X-Ray System facility is given in Figure 5, which indicates the usual position of inspection agents (points 3 and 5) and the scanner (point 4).

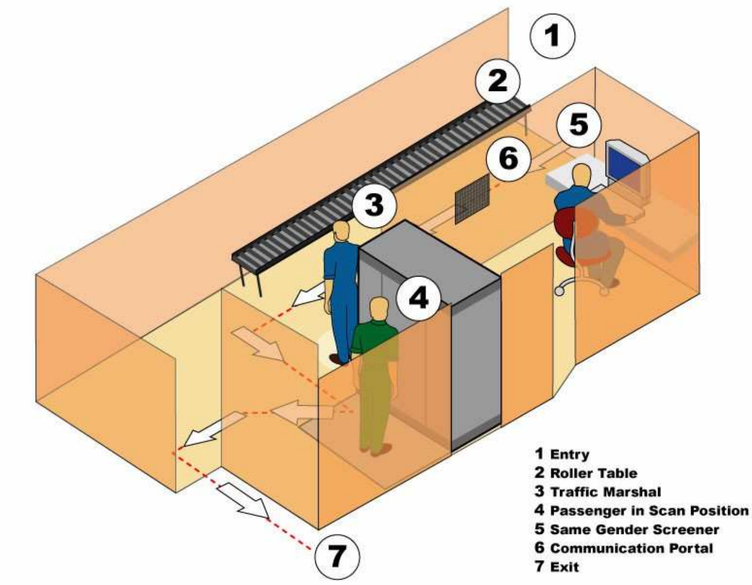

Figure 5: Example of Secure 1000 Single Pose X-Ray System facility

Manufacturer data indicates the position in which agent exposure is highest is located at point 3 of Figure 5. The effective dose received during each inspection by the agent located at this point is approximately 10% of that of the person being inspected. Additional steel protection, offered by the manufacturer, reduces effective dose for the agent by a factor of three.

The maximum effective dose received by the agent may be estimated to be 0.01 µSv per inspection and 0.003 µSv per inspection with additional steel protection.

Considering that an inspection agent located at point 3 (Figure 5) works at a rate of one passenger per minute, resulting in approximately 500 daily inspections, the dose received by the agent is estimated to be

- without steel protection: 5 µSv per day and 1 mSv per year;
- with steel protection: 1.5 µSv per day and 0.3 mSv per year.

5.3 DEGRADED SITUATIONS

The above evaluations were based on normal device operation and inspection process.

Current practice shows that it is legitimate to expect maladjustments and even malfunctions with these machines used at very high rates and with detection that may be delayed in the absence of regular periodic verification of exposure characteristics.

It is entirely possible that difficulty in interpreting an image may cause inspection agents to re-examine a passenger (as a result of inadequate pose, movement during scanning, etc.), especially since this is a new type of inspection.

Exposure exceeding nominal conditions may result and affect a large number of people.

6 GENERAL PRINCIPLES FOR PROTECTION AGAINST IONISING RADIATION AND HOW TO APPLY THEM

Use of ionising radiation in human activities is regulated by three major principles decreed by the International Commission on Radiological Protection (ICRP), an international non-governmental organisation. The general principles aim to effectively protect the individual from risks associated with exposure to ionising radiation in all areas of use (industrial, medical, research and production of nuclear energy). The general principles have been applied at the European level in the form of directives that are transposed by Member States in national regulations.

Activities that have a risk of exposure to ionising radiation are regulated in particular by article L1333 of the Public Health Code.

Article L1333-1 stipulates three principles that must be satisfied in order to pursue activities involving nuclear activities: justification, optimisation and limitation (the following quotations are taken from the Code).

6.1 JUSTIFICATION PRINCIPLE

> *"A nuclear activity or operation may only be undertaken or exercised if it is justified by the advantages it provides, especially for health, society, economy, or science in relation to the risks inherent in exposure to ionising radiation that it may cause to people."*

Compliance with this principle proves in practice to be a complex weighing of advantages and disadvantages that brings together very diverse arguments.

It must be recalled that **compliance with this principle is not solely a function of the dose level that may result from the activity.** For example, very significant doses (that are well above reference levels) can be administered to a patient with the goal of curing a serious illness. In contrast, recourse to certain practices may be refused (e.g., lightning rods containing Ra-226 or Am-241 that are currently prohibited) even though exposure levels that may be induced are particularly low, since devices that do not use ionising radiation and provide the same service are available on the market (e.g., fire detectors).

The justification principle is evaluated by **weighing advantages and disadvantages,** either between two techniques using ionising radiation or between techniques with and without ionising radiation. A wide range of differences (health impact, effectiveness of the system, ease of implementation, cost elements, etc.) are to be considered.

Considering the nature of elements concerned (health, technique, social and economic), and given the absence of a supranational harmonisation process in the field, it should be noted that for the same practice, **different countries may adopt different positions regarding justification**. For example, France has prohibited any use of radioactivity in consumer goods (except in special circumstances) while other European countries have authorised some.

The justification principle, once established, is confirmed by administrative authorisation.

6.2 OPTIMISATION PRINCIPLE

Sometimes termed ALARA ("as low as reasonably achievable"), the optimisation principle is invoked once justification has been established.

It is described in the Public Health Code:

> *"Exposure of persons to ionising radiation resulting from one of these activities or interventions must be kept to the lowest level that can reasonably be achieved, taking account of technical, economic and social factors, and, as relevant, the medical objective sought."*

As with justification, the optimisation principle requires evaluation and weighing of different options, taking into account health (dosimetric), technical and economic aspects.

In terms of techniques and organisation, there are three primary ways of optimisation:

- Minimisation of intensity of exposure source;
- Reduction in frequency and/or length of exposure;
- Strengthening of individual or collective protective measures.

6.3 LIMITATION PRINCIPLE

As described in the Public Health Code:

> *"Exposure of a person to ionising radiation resulting from one of these activities may not cause the sum of received doses to exceed limits set by regulations, except when the person is the subject of exposure for medical reasons or for biomedical research."*

Limits vary depending on population category (workers, general public, etc.)

They are expressed in terms of annual limit values for effective dose (whole body) and equivalent dose for a given organ.

The regulatory values set by the Public Health Code for the general public and workers are given in Tables IV and V.

Organ	**Equivalent dose to organ (mSv)**	**Effective dose (mSv)**
Skin	50	
Lens of the eyes	15	
Whole body		1

Table IV: Annual regulatory dose limits for the general public

Organ	**Equivalent dose to organ (mSv)**			**Effective dose (mSv)**		
	NE [a)]	**B** [b)]	**A** [c)]	**NE**	**B**	**A**
Skin	50	150	500			
Lens of the eyes	15	50	150			
Whole body				1	6	20

[a)] NE: Category of workers considered as non exposed (NE) with the same limit as the general public
[b)] A: Category A workers that may receive more than $3/10^{ths}$ of one of the regulatory limits
[c)] B: Category B workers that may receive more a dose that exceeds one of the limits for general public

Table V: Annual regulatory dose limits for workers

7 IRSN'S RECOMMENDATION ON USE OF X-RAY BACKSCATTER BODY SCAN FOR INSPECTIONS

Considering the extremely low level of individual dose delivered by this inspection technique, use of this method must be evaluated not on the basis of dose received per inspection or per year, but the justification principle.

IRSN underlines that the justification principle in radiation protection calls for avoidance of any useless dose, however low it may be.

The technique is justifiable only if the health and psychosocial risk of an attack is considered greater than the risk of radiation-induced cancers in the general population and professionals involved. IRSN is not competent to pass judgement on the first of these two risks.

A key element in justification of the X-ray backscatter body scanner is the availability of millimetre wave scanner technology, concurrently under study by the French Agency for Environmental and Occupational Health and Safety (AFSSET). This technology appears to offer a comparable inspection with a health impact that is theoretically insignificant.

IRSN recommends that authorities ruling on use of this technique use the justification principle as the basis of the decision-making process and that they demonstrate their argument.

The existence of an alternative technique using non-ionising radiation which has physical properties and biological effects that appear less aggressive and do not provide the same health risks for cancer as ionising radiation must be taken into account for the final decision.

The optimisation principle is secondary in this case. The process cannot be considered for each personal inspection. The optimisation principle can only be applied for a population by selecting individuals for inspection, with security authorities responsible for this selection. It may also be applied to agents in charge of inspections by optimising the human-machine interface.

In a more exhaustive optimisation approach, IRSN believes that the characteristics of the scanner should be reconsidered by the manufacturer in an effort to limit the spectrum of X-ray beam to energy on the order of 15 keV while retaining sufficient detection capability.

Since this technique may potentially be applied to a very large population (in 2008 4.8 billion passengers passed through airports around the world, including 42% for international flights according to statistics provided by Airport Council International), the concept of collective dose[5] may be considered as a risk indicator. IRSN notes (ICRP publication 103[6] and Institute for Nuclear Safety and Protection (IPSN)[7]) that for exposure involving large populations over extensive geographic areas or over long time periods, collective effective dose is not an appropriate management and decision-making tool.

IRSN notes in conclusion that degraded situations may exist for nominal operation of facilities and inspection procedures (see section 4.3 above) and finds that this irrefutable fact is to be taken into consideration by authorities in the final decision justifying use of scanners.

8 IRSN'S RECOMMENDATION ON INFORMATION TO BE PROVIDED TO TRAVELERS THAT MAY BE SUBJECT TO INSPECTIONS USING X-RAY BACKSCATTER BODY SCANNERS

IRSN proposes the following as a basis for passenger information:

- The dose delivered during a personal inspection is extremely low; it is more than one thousand times less than the annual dose resulting from average natural irradiation in France; it is equivalent to one to two minutes of flying at high altitude;
- The very low dose is in addition to an inevitable and much higher dose the passenger will receive during a flight (0.1 µSv out of 1.4 µSv (7%) using the example of Paris-Bordeaux; 0.1 µSv out of 75 µSv (0.13%) using the example of Paris-Beijing);
- The associated health risk with such levels of doses is so low that it cannot reasonably be quantified;
- The risk increases proportionally as the number of inspections increases.

IRSN also recommends that the following advice be given to travellers who may undergo inspection in countries that use X-ray backscatter body scanners:

- Give priority to an inspection method that does not rely on ionising radiation (such as millimetre wave scanner, body search, etc.) when a choice is available;

[5] The collective dose is the sum of the individual doses received by a group of people. The unit is person.mSv; for example the collective dose for 10 people who each received 1 mSv is equal to 10 person.mSv.
[6] Recommendation 2007 of the ICRP, French Edition, Editions Tec&Doc.
[7] IPSN, Dose collective – Indications et contre-indications, EDP Sciences, Les Ulis, 2002. [IPSN, Collective dose-indications and contraindications, EDP Sciences (Les Ulis: 2002)].

- Counsel pregnant women and young children to avoid inspection methods using ionising radiation[8];
- Comply with instructions to avoid having to repeat the inspection process (if the scanner image cannot be read);
- Avoid multiple inspections by using body searches.

9 CONCLUSION

IRSN recommends that public authorities explicitly take the justification principle into account in defining their position regarding possible use of X-ray backscatter body scanners in France and abroad. This principle is one of the bases of international policy on radiation protection and is part of the French Public Health Code (Article L1333-1).

Following investigation conducted for the request of 19 January 2010, IRSN's experts find that application of this principle leads to weighing deliberate, systematic and obligatory exposure of air passengers to ionising radiation, with what is certainly a low dose, and the direct individual benefit, albeit difficult to quantify, for aviation security. If an alternative technology exists that provides sufficient performance from the standpoint of aviation security, and without health risks, the scale is tipped in favour of the alternative technology.

It is also advisable to take into consideration the public's extreme sensitivity to issues concerning artificial ionising radiation outside the medical field where the individual advantage is easy to demonstrate. At the European level in particular, a lack of consensus on which type of inspection technology to implement may result in confusion among passengers regarding the risk incurred with X-ray backscatter technology, especially since it will likely be necessary to inform passengers of the precautions to take (for pregnant women and young children, repeated inspections, etc.) in each airport where the technology is used.

Finally, a decision on use of this type of device on a large scale may constitute a precedent for other applications of the technology, with a subsequent increase in sources of exposure to artificial ionising radiation.

[8] IRSN considers that young children and pregnant women constitute a minority population at airports and should be subject to specific inspection protocol.

Appendix:

Request from the Ministry of Ecology, Energy, Sustainable Development and the Sea

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE DE L'ÉCOLOGIE, DE L'ÉNERGIE,
DU DÉVELOPPEMENT DURABLE ET DE LA MER
EN CHARGE DES TECHNOLOGIES VERTES ET DES NEGOCIATIONS SUR LE CLIMAT

Paris, le 19 JAN. 2010

Le directeur du cabinet du ministre d'État

à

Monsieur le directeur général de l'IRSN
Monsieur le directeur général de l'AFSSET

Référence : D 10000603

Objet : Saisine relative aux éventuels risques sanitaires liés à l'utilisation des scanners corporels.
PJ : 2

Suite à la tentative d'attentat commise sur le vol entre Amsterdam et Detroit le 25 décembre 2009, le Conseil de sécurité intérieure s'est prononcé pour le déploiement rapide, dans le cadre du renforcement de la sûreté de l'aviation civile, d'équipements utilisant des techniques d'imagerie plus performantes que les détecteurs de métaux en place sur les aéroports français.

L'équipement envisagé dans le cadre d'une première expérimentation, et qui doit être opérationnel avant la fin du mois de janvier 2010, est un portique PROVISION de la société L3COM, utilisant des ondes millimétriques. Cet équipement a déjà fait l'objet d'un avis de la CNIL et un rapport de l'APAVE joints. Je souhaite que vous me confirmiez qu'au vu de ces analyses, l'expérimentation qui doit être lancée ne devrait pas présenter de risque sanitaire pour les passagers et les personnels de sécurité dans le cadre de l'utilisation de tels appareils à des fins de contrôle de personnes.

Si vous avez besoin d'informations complémentaires vous permettant d'évaluer les doses associées à une telle pratique, je vous engage donc à prendre attache avec le directeur du Service Technique de l'Aviation Civile, Monsieur Jean-Michel AUBAS, qui vous transmettra les éléments nécessaires à votre analyse.

Vous voudrez bien me transmettre conjointement sous une semaine à partir de la réception des données complémentaires éventuelles du STAC les résultats de votre évaluation.

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Par ailleurs, il n'est pas impossible que d'autres Etats optent pour une technologie alternative, basée sur l'utilisation de faibles doses de rayons X (« backscatter »). Cette option, qui n'est pas souhaitée en l'état par le gouvernement français, pourrait alors concerner les citoyens français transitant par ces aéroports. Je vous saurai gré de m'indiquer quelles recommandations pourraient être apportées le cas échéant aux voyageurs en la matière.

Je vous saurais gré de bien vouloir me signaler toute difficulté concernant la réalisation de vos travaux.

Jean-François CARENCO

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l'avenir

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