

The use of X-ray for security control – Czech experience

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Regulatory approach

- Recently there are five companies in the Czech Republic distributing sources which have got the type approval for X-ray machines – whole body scanners (using backscatter) – for personal security control.
- The Czech Regulator in radiation protection - the State Office for Nuclear Safety (SONS) categorised this devices for non medical human imaging as **sources needed always authorisation - license.**

Licensing

- All kind of such devices are thus under the regulation and control - regardless of very low doses— what is very often incorrectly used as a main argument for wide use of them.
- Based on this fact one of the conditions of its type approval requires to inform the potential user of such device that he shall apply for the license of SONS.
- The applicant for the license has to prepare all necessary documentation including the justification of the use of the source.

Criteria/Conditions

SONS set up the following criteria for the evaluation of the individual applications for approval:

- the particular use of body scanner will be justified and optimized,
- the control will be focused only to the selected (suspicious) persons – it will not be in any case used as a routine control,
- there will be set up an age limit of controlled persons,
- the exposure is understood as a public exposure and thus the limit of 1mSv shall be applied, SONS establishes a dose constraint for the exposure from this particular source 150 μ Sv per year,

Criteria/Conditions

- controlled persons will be informed by the licensee about
 - ❑ the dose they can receive during one control and the related risk
 - ❑ the annual dose (dose constraint) which one person can receive in one year
- a controlled person must have a right to refuse a control with a body scanner and pass an alternative control without using an ionizing radiation



Criteria/Conditions

- pregnant women shall not be asked to pass this kind of control (however this implies that each woman practically can be excluded) – here we took into account mainly the possible psychological impact

Based on the conditions above it could be stated that there is not possible to give in advance and generally a final decision to the use of body scanners. It will depend on the particular conditions of their use.

Justification

Which information, facts, parameters shall be included in the process of justification and optimization in this particular use of sources of ionizing radiation ?

During the discussion with distributing companies and potential users there was clearly visible that justification from the radiation protection point of view is understood by them quite incorrectly as a very narrow view taking into account only the estimated individual doses.

They use often the argument – „*the individual doses are trivial so the exposure is justified*“ (!). To explain them that even trivial doses but unjustified by the clear benefit taking into account economical and social aspects cannot be accepted was very difficult and almost impossible.

Justification

However to identify and correctly weight all aspects in this very specific use of ionizing radiation is very difficult. Social aspects as the level of protection of human dignity, personality, etc.. is difficult to specify generally and the sensitivity to the invasion of these human rights vary from person to person. Also the evaluation of the current threats could be very difficult and depending on many circumstances, interests, pressures, personal points of view, etc..

Request for approval - airport

- SONS has got in 2009 a first official request from one airport in the country for the approval of the use of X-ray machine for security control of persons.
- SONS organized a discussion on the national level inviting the representatives of other ministries and offices somehow involved in this problem – **Ministry of Health, Ministry of Interior, Ministry of Transport – Civil Aviation Department, the Office for personal data protection, the Civil Aviation Authority.**
- Based on this discussion and further analyses the answer of SONS was for the moment **negative**.



Explanatory statement – *published on SONS web side*

- The use of X-ray for personal security control is understood as unjustified under current circumstances and from the point of view of radiation protection.
- The important arguments influencing the decision were that
 - the current security situation in the country doesn't show the elevated threat justifying the use of such technique for security control of persons
 - alternative techniques which enable a surface body control of persons and which can identify "suspicious" objects on the body exist and they are effective enough.

Explanatory statement

The use of body scanners at the airports is influenced also by the fact that current EU legislation doesn't allow at the moment the use of such security control of persons at the airports – there was only a kind of pilot project testing the use of these devices at selected European airports – however at the end of 2008 there was a discussion initiated by some European representatives focused mainly on the ethical aspects of the use of such devices.

This initiative led to the **public consultation** and the questionnaire has been placed on EU web side. The results??

[2008_12_19_body_scanners_questionnaire.pdf](#)

Observations



- What should be also pointed out here is our observation that the main driver in the discussion with regulator and making a pressure to obtain a an approval was a distributor of device and his motivation was quite clear.
- Unfortunately there was not a clear and strong signal from the side of potential users that such device is urgently needed for the current security improvement in the country.
- We understand this fact as a serious mistake in the process of justification for the use of such sources of public exposures.

Jailhouses

- Another potential user we could see in the near future are jailhouses.
- They already are equipped with these devices in some countries and there is a positive observation of decrease in smuggling of prohibited objects.
- The use must be again authorised and the clear conditions shall be established. It must be prohibited to use the device for regular and daily control of staff and prisoners, the controlled persons must be informed and alternative technique must be available.
- This condition raise a question of availability of alternative technique in the case of direct X-ray when also the human cavities are checked.

Other users???

- Sports Stadiums
- Shopping Centers
- Banks
- Strategic Buildings
- ?????



International Standards

The latest official documents addressing this problem are the draft of IAEA IBSS and also the latest version of the draft of EU BSS Directive.

The security control of the persons using X-rays is defined as **non-medical exposure** and the exposure is classified as **public exposure**.

This use of source of ionizing radiation is understood in IAEA IBSS as not justified unless the assessment of the current threat of terrorism in the particular country shows the elevated risk. This formulation is however still under the discussion as well as the appropriateness of the publication of the final judgment in IBSS (exposure is generally justified or unjustified).

EU BSS leave the justification of such exposures on the side of each member state and for justified procedures requires some conditions for their performance similarly as for medical exposures.

Europe

- The scanners "have a serious impact on the **fundamental rights of citizens**," the lawmakers said in a resolution adopted by 361 votes to 16, with 181 abstentions.
- The non-binding resolution asks the bloc's executive European Commission to carry out an economic, medical and human rights assessment of the impact of using full-body scanners.
- The Commission proposed last month (Oct 2008) that the scanners be added to a list of security measures that can be used at airports in the 27-country bloc.
- A number of EU states including the Netherlands already use body scanners, the Commission said, adding that it wanted to harmonize the conditions in which they can be operated.
- The European Parliament resolution does not call for an outright ban on such scanners, but some EU lawmakers said they found them unacceptable.
- "I think this is an offence against human dignity. Using this technology does not make us safer," said the leader of the assembly's Socialist group, Martin Schulz.
- "These are machines that allow for you to be seen totally naked," Schulz said.
- European Commission spokesman Jens Mester said fears concerning the EU executive's proposal were exaggerated.
- "It is correct the body will indeed be pictured," he said. "But the quality is more that of a negative of a photograph, it is not a very clear image but sufficient to detect metal things, explosives or strange objects."

USA

- WASHINGTON (Oct 2009)— The Transportation Security Administration plans to install 150 security machines at airport checkpoints that enable screeners to see under passengers' clothes.
- The installation will vastly expand the use of the controversial body scanners, which can reveal hidden bombs and knives. **But the devices have been labeled as intrusive by some lawmakers.** The House of Representatives in June overwhelmingly passed a measure that would restrict their use by the TSA to passengers flagged by other types of screening, such as metal detectors. **The measure is pending in the Senate.**
- TSA spokeswoman Kristin Lee said the machines are "critical" to stopping terrorists with homemade bombs that may elude metal detectors. The agency hasn't decided which airports will get the machines, Lee said.
- The \$100,000 scanners shoot low-intensity X-rays that penetrate clothing, bounce off a person's skin and create images that show solid objects as dark areas. The TSA machines have privacy additions to create images that look like etchings. Screeners view them on a monitor in a locked room near a checkpoint and delete them immediately after viewing.
- **"Body imaging is a total invasion of privacy,"** said Rep. Jason Chaffetz, R-Utah, who proposed the restriction. "You don't need this kind of scrutiny."
- Although the machines use X-rays, a 2003 report by the National Council on Radiation Protection & Measurements, which Congress created to develop radiation guidelines, said people can safely be scanned by the machines up to 2,500 times a year.
- "Imaging technology is safe," Lee said.
- The TSA used \$25 million from the federal stimulus package to buy the scanners from California-based Rapiscan Systems. The agency is using an additional \$22 million to buy 500 upgraded machines that scan bottles for liquid explosives.