REGULATORY CONTROL OF X-RAY SCANNING OF PASSENGER CARS

TECHNICAL MEETING ON IMPLEMENTATION OF THE REQUIREMENTS IN THE INTERNATIONAL BASIC SAFETY STANDARDS IN RELATION TO NON-MEDICAL HUMAN IMAGING

17-20 JANUARY 2017

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PRESENTATION OUTLINE

✓ BACKGROUND
✓ NATIONAL LEGISLATION
✓ REGULATORY CONTROL PROCESS
✓ SUMMARY OF THE APPLIED REGULATORY CONTROL
Regulatory body of Jordan: EMRC
User: customs department
Practice: passenger vehicle inspection system

Purpose: screening passenger cars using x-rays for the detection of concealed objects, to reduce drug and weapons smuggling entering to Jordan

The main reason for justification: the national security threat
NATIONAL LEGISLATION

✓ Law No. 43/2007 "radiation protection and nuclear safety and security"

✓ Reg. No. 108/2015 "radiation protection regulations"
Article 4) from the reg. The use of radiation sources restricted the application of the basic principles of radiation protection.

Article 13)

A) it is prohibited to expose the human to the radiation sources unless the purposes are for diagnosis or treatment, except what is mentioned in (d).

D-1) The cabinet have the right in accordance of the recommendation of the board of EMRC to approve specific justified practices related to the national security threat, and general safety, and in this case the applicant have to provide the Commission (EMRC) with the justification of this practice and evidence that ensure the dose will kept to the minimum.

D-2) for whom have approval of the practice in accordance to article d-1, they should comply with the principles and requirements of radiation protection.
According to the national legislation and to the authorization system in Jordan, in August 2010, Customs department notify the RB (JNRC before April 2014) of their needs to import and use the "Passenger Vehicle Inspection System" at some critical border to reduce drug and weapons smuggling depending on threat assessment study.

The RB requested from the Customs to provide it in advance a radiation safety report of the device from the manufacture included the typical radiation doses imparted during operation of the system and an evidence that the safety feature are in compliance with their national standards and approvals.
Provided documents:

- Safety report with the typical radiation dose associated with the system, and examines the system against the requirements contained in ANSI N43.17-2009 “Radiation Safety for Personnel Security Screening Systems Using X-Ray or Gamma Radiation” American National Standards Institute.

- Technical specification of the system.

- Written document of the purpose and reasons to operate such system.

- Threat assessment of the border point.
- maximum output from the system (120 kV and 4 mA),
- worst case dose to a driver/passenger of the largest possible open air vehicle is less than 0.25 μSv (25 μrem) per scan.
The minimum driving speed through the system was determined to be 2.2 miles per hour. At this minimum speed the dose per scan limitations contained in the standard are satisfied under assumed worst case conditions. Any vehicle that drops below this speed will cause the x-ray production to terminate.

The general area established by the operating institution for the purposes of limiting or controlling access to the area where the screening will be performed.
Dose Limitations

- The reference effective dose shall not exceed 0.25 μSv (25 μrem) per scanning.
- The reference effective dose received by individuals from one facility shall not exceed 250 μSv (25 mrem) over a 12-month period.
- The ambient dose equivalent, H*(10), outside of the inspection zone shall not exceed 20 μSv (2 mrem) in any 1 hour.
- The system should be positioned and operated such that the ambient dose equivalent at any work station does not exceed 1 mSv (100 mrem) per year.
- Under maximum operating parameters, the leakage ambient dose equivalent at any point 30 cm from any external surface of the system, outside of the primary beam, shall not exceed 2.5 μSv (0.25 mrem) in any 1 hour.
Summary of the applied regulatory control

- After the evaluation of the safety report the Board of the RB accept the Justification to this specific practice with the condition that the passengers not to be scanned.
- After the installation of the system RB inspector performed inspection with the present of an external expert and verification of the safety evaluation was performed.
- Waiting area for the passengers was allocated.
- Radiation signs written instructions was requested.
- Authorization by licensing was required.
- Training to the customs operator on radiation safety was conducted by the RB.
- Radiation protection requirements according to the national regulations requested.
- Regulatory regular inspections are performed.
THANK YOU