Report back from
Working Group 4

Justification and Optimisation
Use of Security Devices to Screen Persons

- *What are the radiation protection issues associated with introduction of security related screening of persons?*
- *How are such sources justified? What criteria should be used to assess the potential benefit? Is "security" always a sufficient justification?*
- *How should exposures (workers and public) be optimised? What dose constraints are appropriate - for screened persons and for operators?*
- *What criteria, if any, should be applied when deciding who should and should not be x-ray screened? What information should be given to persons that are screened? What choices should they have?*

What are the radiation protection issues (screening of persons)?

- These practices increase public doses:
  - Use of ionising radiation for security purposes should NOT be trivialised.

- Increased worker exposure?
  - Security workers using the equipment or other workers required to be scanned by it,
  - Doses are low.

- Requirement for new standards / guidance on:
  - Equipment used (backscatter X-ray units, transmission X-ray units, etc.)
  - To provide guidance on maximum exposure levels for different types of equipment.

- Communication and information:
  - Those scanned (public),
  - Those scanning (security workers).

How are such sources justified?

- Justification case lead by the user of the equipment:
  - Ultimate decision made by national authority,
  - Require knowledge of security issues,
  - Justification for one situation does not automatically justify another: e.g. use in an airport and use in a school.

- Radiation protection professional feeds into justification process:
  - Does not lead justification process.

- Dose constraints required on “Use”:
  - Need for exposures to be justified and constrained.

Optimisation

- Selection of dose constraint for public below dose limit:
  - 0.3 mSv/year? (ICRP 103 recommended value single practice): from all scans to an individual in a single year from a particular type of equipment and situation,
  - In practical terms, need for reference doses for individual scans depending on the equipment and situation.

- For each system (equipment + situation):
  - Assess use,
  - Attempt to optimise by keeping below chosen dose constraint: define correct setting-up and quality assurance program, procedure for operation.

- Constraint is not dose limit:
  - Doses beyond constraint may be justified.

Conclusions

- Separate licensing/ justification for EACH application (use) of scanning equipment:
  - e.g use in a school would be separately justified for a penal institute.

- Dose constraints to be selected:
  - General dose constraint: 0.3 mSv/y?
  - Dose constraint for single scan: reference dose.

- Standards/regulations must require that specific information is given to persons selected for screening on risks.

- People must retain the choice not to be X-rayed.

Conclusions

- Requirement for quality assurance programme:
  - Similar to medical uses,
  - Reference doses for screening.

- Specific protocols must be developed to cover screening programme:
  - e.g who selects the individual for screening: appropriate information to security workers on radiation protection,
  - Particularly for transmission x-ray scans (lead to the highest doses).

- Use of ionising radiation for security purposes should NOT be trivialised.

Recommendations

- National authorities to require:
  - Security-screening equipments should only be used by or under direction of law enforcement bodies,
  - Each particular use should be justified/licenced,
  - Optimisation:
    - Keep doses below 0.3 mSv/y general dose constraint,
    - Advise on reference dose per scan,
    - Further optimisation may be appropriate under the dose constraint.
  - Preparation of detailed protocols for equipment Quality Assurance, to ensure correct use of equipment, and for selection of those to be scanned.

Recommendations

- National authorities to require:
  - Information should be provided to those selected and choice given not to be scanned (certain caveats to be taken into consideration).

- IEC (International Electrotechnical Commission) should agree and adopt draft IEC standard 62463 (Radiation protection instrumentation - X-rays systems for the screening of persons for security and the carrying of illicit items).

- ICRP is encouraged to consider practices that involve the deliberate exposure of persons for non-medical purposes.