Report back from
Working Group 3

Management of emergency exposure situations from an ALARA perspective

- *How should potential doses (public and workers) from malevolent acts be estimated? And how can these doses be taken into account when establishing a safety/security programme?*
- *How should first responders/emergency workers be equipped and trained to help restrict their own radiation exposure?*
- *In the event of an emergency exposure situation, what practical arrangements should be in place to apply the ALARA principle, i.e. to restrict the doses received by workers and the public as the situation evolves?*

Topic 1: How should potential doses (public and worker) from malevolent acts be estimated? And how can these doses be taken into account when establishing a safety/security programme?

- ALARA should be applied in the same way as for normal operations
- No a-priori estimations available
- What sources and scenarios are available? (national emergency plan)
- Precautionary approach
- Estimate doses with gain of information as realistic as possible (direct radiation, contamination, airborne radionuclides)

Topic 1: How should potential doses (public and worker) from malevolent acts be estimated? And how can these doses be taken into account when establishing a safety/security programme?

Recommendations

- Structured collaboration (first responders, cbr-staff, radiological experts), graded approach
- Estimate doses for first responders and the public in case of missing sources
- Enhance information exchange from police to national radiation protection authorities (emergency staff / radiological experts)
- Assure radiation protection staff to be on site as soon as possible depending on the capabilities of the state

Topic 2: How should first responders / emergency workers be equipped and trained to help restrict their own radiation exposures?

- Efficient use of graded approach ensures safety of first responders without any special equipment

- Use of alarm dose meters for first responders?
  Topics discussed:
  - For instance 250 mSv as reference level?
  - For instance a dose-rate of 5 times above the natural background?
  - Consequences of alarm-beeping
  - First information

- Use of dose-rate meters in cars?

Topic 2: How should first responders / emergency workers be equipped and trained to help restrict their own radiation exposures?

Recommendations

- Medical responders and police should be equipped with FFP3-masks and gloves
- First responder training with regard to awareness of radiological threat
- Scenario based exercises to ensure proper working of the organizations involved in the graded approach should be completed in regular intervals

Topic 3: In the event of an emergency exposure situation, what practical arrangements should be in place to apply the ALARA principle, i.e. to restrict the doses received by workers and the public as the situations evolves?

Recommendations

- The perimeter of the scene should be defined and set up as quick as reasonably achievable (AQARA)
- Radiation experts should be available on On-call-duty
- Structure that is flexible to adopt to the needs of the deployment
- Introduction of a common “Language” of involved organisations (fire brigade, police, radiation protection agency)
- Communication to the public should to planned in advance, establishment of a “Crisis Command Center”

New Topic 4: Can security measures be judged by means of a "probability of occurrence"? Does this depend only on source activity/property or also on the assumptions about the terrorists behavior?

- A judgment on the risk of malevolent action needs to take into account:
  - attractivity of the target
  - vulnerability of the target
  - potential of the terroristic group

- This is the task of units of police and counter terrorism

	Accidents during operation	**Malevolent act to installation**	**Malevolent act at arbitrary place**
Example	Venting at NPP, fire at nuclear medicine	Explosion in lab; Airplane crash to NPP	Dirty bomb; RED
Source term known	Y	Y max. estimate	N
Protection of first responders	Emergency plan, part of licensing process		
Dose reduction for public	Measures in place		
Readily available information			
Precaution measures			
Exercises			
…			