Dose constraints

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# Dose Limits, Dose Constraints, Reference levels

<table>
<thead>
<tr>
<th>Dose Limits</th>
<th>Constraints and Reference Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protect individual workers from occupational exposure and the Representative Person from public exposure.</td>
<td></td>
</tr>
<tr>
<td>From all regulated sources in planned exposure situations</td>
<td>From a source in all exposure situations</td>
</tr>
</tbody>
</table>

**Image:**
- Diagram on the left: Protecting individual workers from occupational exposure.
- Diagram on the right: Protecting the representative person from public exposure.

**Event Details:**
- BSS WS Manila
- 28th October to 1st November 2013
Dose limit

- The dose limit is the value of the effective dose or the equivalent dose to individuals that shall not be exceeded in planned exposure situations other than medical exposures (i.e. occupational and public).

- From all regulated sources to an individual

- Dose limits are not applied in:
  - existing exposure situations
  - emergency exposure situations
  - medical exposures (although they are planned)
Reference level (RL)

- RL is the level of dose, risk, or activity concentration above which it is not appropriate to plan to allow exposures to occur and below which optimization of protection and safety would continue to be implemented.

- RLs are applied in emergency exposure situations or existing exposure situations.
A prospective value of individual dose or risk (i.e. dose constraint or risk constraint) that is used in planned exposure situations as a parameter for the optimization of protection and safety.

It serves as a boundary in defining the range of options in optimization.

It is a source-related value applicable to:
- Occupational exposures
- Public exposures
Dose Constraints

- Dose constraints are not limits.
- Dose constraints are part of the optimization process.
- They are used prospectively.
Dose Constraints – workers (1)

- Licensees establish dose constraints
- Regulatory body reviews dose constraint as part of the regulatory process
- Licensee involves workers in the process of optimization
- Design aspects:
  - Design of equipment / new facility
  - Preparing for new operation e.g. modification
- Operational aspects:
  - Evaluation of trends
  - Evaluation of effectiveness of RPP
  - Identify areas for improvement
  - Training of workers
Dose Constraints – workers (2)

- For occupational exposure, it is a restriction on individual doses to workers established and used by registrants and licensees.

- It serves to set the range of options in optimizing protection and safety for the source.
Dose Constraints – public (1)

- The government or the regulatory body set the dose constraint for the public

- Factors to consider in setting dose constraint
  - The characteristics of the source and the practice
  - Good practice in the operation of similar sources
  - Dose contributions from other authorized practices
  - The views of interested parties
Dose Constraints – public (2)

- Source-related value established or approved by the government or the regulatory body.
- Account taken of the doses from planned operations of all sources under control.
- For each particular source, the dose constraint is intended to ensure that the sum of doses from planned operations for all sources under control remains within the dose limit.
For medical exposure, DC is a source-related value used in optimizing the protection of:

- carers and comforters of patients undergoing radiological medical procedures, and
- volunteers subject to exposure as part of a programme of biomedical research.
Acknowledgements

- Presentation delivered by Maria del Rosario Pérez, Radiation Programme, Department of Public Health and Environment (PHE), World Health Organization (WHO).

- This presentation includes some slides originally prepared by Tony Colgan, Division of Radiation, Transport and Waste Safety (NSRW), International Atomic Energy Agency (IAEA).
### When DCs are applied?

#### Summary table

<table>
<thead>
<tr>
<th>Exposure situation</th>
<th>Occupational exposures</th>
<th>Public exposures</th>
<th>Medical exposures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned</td>
<td>DL <strong>DC</strong></td>
<td>DL <strong>DC</strong></td>
<td>DRL (patients) <strong>DC</strong> (carers, comforters, volunteers)</td>
</tr>
<tr>
<td>Existing</td>
<td>RL</td>
<td>RL</td>
<td>------------------</td>
</tr>
<tr>
<td>Emergency</td>
<td>RL</td>
<td>RL</td>
<td>------------------</td>
</tr>
</tbody>
</table>

*DL* = Designated Level, *DC* = Designated Category, *DRL* = Designation Reference Level