Boundary conditions

1. Only evaluation: no good or bad providers
2. Not time consuming
3. Self-assessment instead of obligated external auditing

Descriptors of covered learning outcomes

<table>
<thead>
<tr>
<th>Description</th>
<th>Fulfilled</th>
<th>Not fulfilled</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

An excerpt from the filled list of 16 quality criteria

<table>
<thead>
<tr>
<th>Training provider</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>ENETRAP-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Teachers and practical tutors have demonstrable competences with regard to the topic of their lessons.</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>9. Each event is subject of a written evaluation by the participants. Items for evaluations are organisation, teachers, content, materials and facilities.</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>11. Complaint procedures are present.</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>12. There is a participant registration associated with a document control system (list of participants, score lists, archive of distributed diplomas and certificates).</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

The developed mechanism can be used to evaluate providers with a standard on different quality criteria.
Development and application of a mechanism for training material


Boundary conditions
1. Learning outcomes:
   - Knowledge based
   - Skill-based
   - Competence based
2. Independent of number of pages

Descriptors of covered learning outcomes

<table>
<thead>
<tr>
<th>Covered</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>ERPTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not covered</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Global, qualitative</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Important subjects covered, quantitative</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Detailed, quantitative</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

A comparison of learning outcomes with a standard (ERPTS)

W: material for an RW course
O: material for an RPO course
E: material for an RPE course

<table>
<thead>
<tr>
<th>Training material</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>ERPTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composition of matter</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proton-Neutron ratio, ionisation, excitation</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Alpha decay</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Indication of the level of material bij the provider*</td>
<td>W</td>
<td>O</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>W</td>
<td>W</td>
<td>E</td>
<td>W</td>
<td>O</td>
<td>E</td>
<td>W</td>
<td>E</td>
</tr>
</tbody>
</table>

The developed mechanism can be used to compare material with a standard on different knowledge based learning outcomes. The learning outcomes have to be as detailed as possible to make the description easier.
Training and Education in radiation protection at the Nuclear Research and consultancy Group (NRG), Petten, The Netherlands

Target group
- Nuclear industry (e.g. NRG, Covidien)
- NORM industry (e.g. Taqa, Wintershall)
- Fire departments for awareness
- Hospitals (MPE, RPO and other workers)
- X-ray machines (medical doctors and dentists)

Acknowledged courses for RW, RPO and RPE
- Courses for RW to handle a few sources
- Courses for RW and RPO to handle up to 10 sources
- Courses for RPO and RPE to handle more than 10 sources
- Courses for Medical doctors to use radiation

Other courses for RW, RPO and RPE
- Basic information course for starting RW
- Refresher courses for RW in NORM industry (every two year)
- Refresher courses for RW about measurement of radiation and contamination
- Refresher courses for RPO and RPE in different subjects
  - General knowledge
  - About organisational, procedural and administrative aspects
  - About handling incident, accidents and disasters
  - About NORM handling and legislation
  - Radiation protection using neutrons

Other courses
- Theoretical course about nuclear technology in different levels
  - Management level
  - Worker level (operator)

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