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Regular Requirements on Education and Training for Radiation Protection in Switzerland: Comparison with Definitions of RPE and RPO in EU BSS

7. July 2015 / HERCA Workshop, Paris

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Categorization of Persons Involved with Radiation Protection

The needed knowledge, competence, skills and experience of persons, who are or may be exposed by ionizing radiation or are responsible for radiation sources are depending on:

- kind of job, task, role, responsibility ...
- magnitude of risk
- kind of application (source, exposure pathway): medicine, nuclear, research, industry, transportation, emergency preparedness



Cat. 1.: Exposed Persons

<p>group of persons depending on their role, tasks and responsibility</p> <p><i>examples</i></p>	<p>information resp. education & training</p> <p><i>content, objectives</i></p>
<p>Exposed Persons, not directly handling with sources or radiation:</p>	<p>responsibility lies by the licensee</p>
<ul style="list-style-type: none">• not occupationally exposed, E < 1mSv/y for normal operation <p><i>gardener, secretary, ...</i></p>	<p>information and instructions</p> <p><i>basic rules and bans in RP, reaction on alarm</i></p>
<ul style="list-style-type: none">• occupational exposed, E > 1mSv/y may be <p><i>painter, electrician, member of emergency org. like policeman, first aid services ...</i></p>	<p>instructions/briefing</p> <p><i>health effects from irradiation, rules and bans, reaction on alarm, natural exposure and estimated exposure from job</i></p>



Cat. 2.: Persons handling with sources

group of persons depending on their role, tasks and responsibility <i>examples</i>	kind of information resp. education & training <i>content, objectives</i>
persons, handling with sources or radiation <i>operator, maintenance staff, radiographer assistant, laboratory worker, ...</i>	basic education and training <ul style="list-style-type: none">• the licensee is responsible for the coordination,• no recognition necessary <i>+...basic knowledge on physics of radiation and interaction with matter, basic rules of radiation protection, optimized handling, application of legal requirements and company rules</i>



Cat. 3.: Persons responsible for RP for other persons (RP-person in charge)

group of persons
depending on their role, tasks and responsibility

examples

persons, assuming responsibility either

- on particular RP duties in a enterprise or
- on actions in an emergency response or
- on medical applications on patient or
- on giving advice in case of radon occurrence

*RP-controller, RP-technician, shift leader in NPP
control room, ...*

firemen instructor, ...

staff nurse for x-ray diagnosis, surgeon, ...

cantonal radon expert (new),

kind of
information resp. education & training

content, objectives

education and training,

- controlled or coordinated by the licensee,
- some are part of vocational E&T
- **recognized by the competent authority**

*Education content and objectives depend strongly
on kind of handling, risk of application*

*The ordinance about education and training include
requirements on **19 different RP-person-groups***

Duration of E&T varies from

- 1 day for driver of radioactive goods (ADR)
- ½ year RP school, ¼ year on the job training and 3 years experience for RP-technician in NPP



Cat. 4.: “RP-Commissioner”

group of persons
depending on their role, tasks and responsibility

examples

kind of
information resp. education & training

content, objectives

**RP-commissioner appointed by licensee
responsible to ensure RP in and outside
of the premises in conformity with legal
rules**

*RP-commissioner working as a radiographer
responsible for instruction of other staff, ...
RP-Manager of nuclear power plant, ...
Medical Physics Expert in a hospital, ...*

education and training,

- recognized by the competent authority
(recognition of training courses or individual
competences)

*Education content and objectives depend strongly
on kind of handling and risk of application*

*The ordinance about education and training include
requirements on **21 different RP-commissioner***



Responsibility, Tasks and Competences of RPO

Definition of RPO and their tasks* from BSS:	Cat. 3	Cat. 4
• technically competent in radiation protection matters	👍 👍 👍	👍 👍 👍
• supervise or perform RP arrangement	👍 👍 👍	👍 👍 👍
• ensuring RP in accordance with requirements	👍 👍	👍 👍 👍
• work place monitoring	👍 👍 👍	👍 👍 👍
• maintaining records of radiation sources	👍 👍	👍 👍 👍
• assessments of the safety and warning systems	👍	👍 👍
• supervise health surveillance program		👍 👍
• information, introduction and training of exp. workers	👍	👍 👍 👍
• giving advice	👍 👍	👍 👍 👍
• establishing work plans	👍 👍	👍 👍 👍
• providing reports to management	👍	👍 👍 👍
• prevention, preparedness and response to emergency	👍 👍	👍 👍 👍

*** not every task has to be covered by each RPO**



Comparison with definition of RPO

The tasks (and competence) of **RPO** are

partly identical with those tasks of

Category 3 Persons (RP-person in charge)

mostly identical with those tasks of

Category 4 Persons (RP-commissioner)



Responsibility, Tasks and Competence of RPE

Definition of RPE and their tasks** from BSS Cat. 3 Cat. 4
(art. 4, 14.2, 34, 82):

- | | | |
|--|-------|-------|
| • giving advice | 👍 👍 | 👍 👍 👍 |
| • recognized competence | 👍 👍 👍 | 👍 👍 👍 |
| • examination and testing of protective devices | 👍 👍 👍 | 👍 👍 👍 |
| • examination and testing of measuring instruments | 👍 | 👍 👍 |
| • review of radiation protection plans for installations | 👍 | 👍 👍 👍 |
| • acceptance of new or modified radiation sources | 👍 | 👍 👍 👍 |
| • checking the effectiveness of protective devices/tech. | 👍 👍 | 👍 👍 |
| • calibration of measuring instruments and | 👍 | 👍 👍 |
| • regular checking that instruments are serviceable | 👍 👍 👍 | 👍 👍 👍 |
| • regular checking that instruments are correctly used | 👍 👍 👍 | 👍 👍 👍 |
| • establishment of appropriate dose constraints; | 👍 | 👍 👍 |
| • categorisation of controlled and supervised areas | 👍 👍 | 👍 👍 👍 |

** not every task has to be covered by each RPE



Responsibility, Tasks and Competence of RPE

Definition of RPE and their tasks from BSS

Cat. 3 Cat. 4

(art. 82):

- | | | |
|--|-----|-------|
| • classification of workers | 👍 | 👍 👍 👍 |
| • workplace monitoring programmes | 👍 👍 | 👍 👍 👍 |
| • individual monitoring / personal dosimetry | 👍 👍 | 👍 👍 |
| • appropriate radiation monitoring instrumentation | | 👍 👍 |
| • quality assurance | 👍 | 👍 👍 |
| • environmental monitoring programmes | 👍 | 👍 👍 |
| • arrangements for radioactive waste management | 👍 | 👍 👍 |
| • arrangements for prevention of accidents/incidents | 👍 | 👍 👍 |
| • preparedness/response in emergency exp. situations | 👍 | 👍 👍 👍 |
| • training/retraining for exposed workers | 👍 | 👍 👍 |
| • investigation and analysis of accidents/incidents | 👍 | 👍 👍 👍 |
| • conditions for pregnant and breastfeeding workers | 👍 | 👍 👍 |
| • preparation of prior risk assessments | 👍 | 👍 👍 👍 |
| • preparation of written procedures | 👍 | 👍 👍 👍 |



Comparison with definition of RPE

The tasks (and competence) of **RPE** are

partly identical with those tasks of

Category 3 Persons (RP-person in charge)

mostly identical with those tasks of

Category 4 Persons (RP-commissioner)



Ensuring appropriate RP in the Swiss RP system

The tasks of authority body, undertaking, RPO, RPE, MPE, occupational health services and dosimetry services **written in BSS are covered by the swiss legal requirements** (RP law, RP ordinances, guidelines):

- legislative power by competent authorities developing a **system of requirements** (in some items very detailed) with deep involvement of stakeholders
- **system of employment/appointment of cat. 3 and 4 persons** within undertakings, emergency response organisations and government
- **detailed education and training requirements** and **recognition** of cat. 3 and 4 persons (recognition or courses, except RP-Com. in NPP)
- **support by** (with advice and services taking partly the role of RPE) :
 - RP training facilities,
 - authorities (licences, approvals, inspections, guidelines, event analysis, supervision)
 - specialised services (calibration lab, radioanalytic lab, engineering consultants,...),
 - Swiss-German RP Association (Fachverband für Strahlenschutz) publishing advice,
 - Swiss Federal Commission of RP offering information (national expert talks, reports)



Considering the EU-BSS at the Total Revision of all RP Ordinances (process continuing until 2017)

- There will be no significant change in the categorization of persons involved in RP:
no definition of RPO and RPE as BSS in the ordinance
- but there will be an **explanation who will take the role of RPE** in Switzerland and how the recognition of those person will be done (**requirements on competence of member of authority body and training facilities**)
- The requirements about education and training will be supplemented by the **determination of learning objectives** for each of the cat. 3 and 4 persons
- **recognition of foreign persons** with competence in RP by the authority body is possible and will be developed further on
- **bilateral swiss-german recognition** exists for RP-assistant, RP-controller and RP-technician for nuclear facilities



- Merci, für`s Zuelose
- thank you, for your attention





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