Legal Requirements for Radiation Protection Training in Germany

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European Safety Directives

In order to work safely in the field of radiation protection
- proper education
- initial training
- continuous professional training in conceptual, administrative and operational radiation protection is essential.

The obligation for appropriate
- training of personnel occupationally exposed to ionizing radiation or and
- information of personnel with a potential contact to radiation is therefore laid down in the relevant European safety directives.

Radiation Protection Training in Germany

On the national level, the legal requirements for radiation protection training differ widely in Europe.

In Germany, each licensee needs at least one person who is in charge of radiation protection matters in relation to the licensee's type of 'practice'. This person, who could be for example a technician, an engineer, a physicist, a medical doctor etc., needs an

- adequate education and training in radiation protection depending on the type of practice and on his/her qualification and radiation protection tasks;

Radiation Protection Training in Germany

- practical experience in a typical relevant practice, in general some months (i.e. for small sources) up to 2 years (i.e. medical physicists or radiation protection personnel in nuclear power plants) or 3 years (i.e. for medical therapy - this time may be included in the physician's professional training as a specialist in a specific therapeutic field);
- task specific training courses in radiation protection (mainly legal requirements, guidelines, practical issues) lasting from some days up to several weeks, ending with an examination; the training centres providing the courses need accreditation by the competent authority.

Guidelines (GL) concerning the expert knowledge in radiation protection

MEDICAL AREA
• GL „Radiation Protection in Medicine“ • GL on the „Qualified Competence according to the X-Ray Ordinance“ • GL on “Medical Surveillance of Occupationally Exposed Persons” • GL on “Radiation Protection in Veterinary Medicine”
INDUSTRY and RESEARCH
• GL on the „Qualified Competence in Radiation Protection“ • GL on the „Qualified Competence for the Operation of Non-Medical X-Ray Units“
NUCLEAR AREA
• GL on the „Qualified Competence of Personnel in Charge of Radiation Protection in NNP and other Nuclear Installations“ • GL on the “Demonstration of Qualified Competence of NNP Personnel” • GL on the “Demonstration of Qualified Competence of Research Reactor Personnel”

Necessary Information of Professionally Exposed Workers

- Information about
  - radiation hazards and safety precautions
  - important subjects of the legal regulations
- Instructions at regular intervalls (6 months)
- Special training and continuing education for radiographers, employees of firebrigades and police

Expert Knowledge of Radiation Protection Supervisors

Expert knowledge is composed of:

- Theoretical knowledge
- Practical experiences

Vocational education

Vocational experiences

Radiation protection courses

Differentiation Criteria of Expert Knowledge

- **Activity of radioactive substances**
- **Mode of radioactive substances** (sealed/unsealed)
- **Kind of radioactive substances** (nuclear fuel, other substances)
- **Field of work** (X-ray, nuclear engineering, medical and technical applications, e.g. measurement technique, control engineering, non-destructive testing, handling of radio-nuclides in laboratories, radiation sources in schools)

Expert knowledge - Application of sealed radioactive sources

Expert knowledge CL : clearance level		Minimum period of vocational experience dependent on the vocational education in months				Radiation protection course
Vocational education		no	sw	e, m	gu, gc	Duration
2	**Application of sealed radioactive sources**					
2.1	Use and storage of devices with r. s. ($A \leq 10^5$-times the CL)	3	0	0	0	14 h
2.2	Handling of r. s. ($A \leq 10^5$-times the CL)	12	3	3	0	26 h
2.3	Handling of r. s. (if not covered by 2.1 or 2.2)	-	12	6	3	39 h

sw: skilled worker; e,m: engineer, master; 0: no vocational experience necessary
gu, gc: graduate from university, technical college; no: no technical degree
- not provided by the corresponding vocational education;

Expert knowledge - non-destructive testing with sealed radioactive sources

Expert knowledge		Minimum period of vocational experience dependent on the vocational education in months				Radiation protection course
Vocational education		No	sw	e, m	gu, gc	duration
3	**Non-destructive testing (with sealed radioactive sources)**					
3.1	Radiation protection supervisor with restricted competence (at changing places of work) (RPA)	12	6	3	3	32 h
3.2	Radiation protection supervisor with overall responsibility	-	12	6	3	38 h

sw: skilled worker; e,m: engineer, master; 0: no vocational experience necessary
gu, gc: graduate from university, technical college; no: no technical degree
- not provided by the corresponding vocational education;

Expert knowledge - Application of unsealed radioactive sources

Expert knowledge CL : clearance level		**Minimum period of vocational experience dependent on the vocational education in months**				**Radiation protection course**
Vocational education		no	sw	e, m	gu, gc	duration
4	**Application of unsealed radioactive sources**					
4.1	Handling of r. s. ($A \leq 10^5$-times the CL)	24	9	6	3	39 h
4.2	Handling of r. s. ($A > 10^5$-times the CL)	-	24	9	6	54 h
4.3	Handling of nuclear materials	-	-	9	6	60 h
sw: skilled worker; e,m: engineer, master; 0: no vocational experience necessary gu, gc: graduate from university, technical college; no: no technical degree - not provided by the corresponding vocational education;						

Recognition

If the prerequisites are fulfilled (appropriate verification and certificates are required) the person is recognised (assessment of proofs and certificates) by the competent authority (or an appropriate institution when the competent authority has delegated the recognition) either

- in an individual accreditation document (physicians or medical physicists); or
- within the scope of licensing procedures, for all other persons trained - or later on, when persons change,
- via reporting to the competent authorities.

Accreditation for all persons trained as well as subsequent regular 'refreshment' of training every 5 years is required in the Radiation Protection Ordinance and in the X-Ray Ordinance.

Conclusion

In order to achieve an equivalent level of qualified competence in radiation protection in Europe, action has to be taken, beyond national systems and different approaches, to harmonize curricula, duration and recognition of the qualification and experience acquired in courses and during practical training within Europe. The formulation of European guidelines for minimum requirements of content, duration and recognition of training incorporated in the regulatory framework could be a first step to a more uniform approach.