

Monitoring the effectiveness of the training program in radiation protection, safety, security and environment at the Belgian Nuclear Research Centre SCK•CEN

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The Belgian Nuclear Research Centre in a nutshell

- 1952: cradle of nuclear research, applications and energy development in Belgium
- > 60 years later: international player in the field of nuclear R&D
- ~700 staff, >50% with academic degree + ~ 70 PhD students
- Mission:
 - 3 major **scientific research** areas:
 - Nuclear materials sciences
 - Advanced nuclear systems
 - Environment, health and safety
 - **Services** towards industry, healthcare, government
 - **Education and training**





Knowledge transfer = key to SCK•CEN More visibility since 2012: SCK•CEN Academy

Because of:

- More than 60 years of **experience** in nuclear research and technology
- Most **recent** knowledge and development
- **Innovative** projects
- Availability of **large and unique nuclear installations**

SCK•CEN is, next to renowned research centre, ideally suited to be an **education and training (E&T) centre** (complementary to universities)

- **SCK•CEN Academy**: coordinates all E&T activities at SCK•CEN



SCK•CEN Academy 4 pillars

■ Guidance young researchers

- Thesis (PhD, Master, Bachelor level), post-docs, internships, visits
- Outreach activities for high schools

ETRAP2017-A0088
Friday June 2 - 10:00

■ Organization of courses and events

- Contribution to academic learning in collaboration with universities

- Customized training for professionals

ETRAP2017-A0086
Wednesday May 31 - 16:05

■ Policy support on E&T matters and international collaborations

- EC Framework programs, Horizon2020, expert groups of IAEA, OECD, ...

■ Caring for critical-intellectual capacities for society

- Scientific/technical + context!

ETRAP2017-A0009
Thursday June 1 - 11:30



Pillar 2 - Organization of courses and events

- Academic courses: collaborations with universities
 - BNEN (Belgian Nuclear higher Engineering Network)
 - Radiation Protection Expert
 - Others
- Customized training courses/open courses/project courses
 - Any topic SCK•CEN performs research on
 - ➔ Radiation protection



Continuous Professional Development for SCK•CEN employees

- Centrally organized by “SCK•CEN Learning Centre”
 - Development and implementation of policy on CPD actions
 - Management and practical organization of training activities

- **Aim:** maintain and increase competences in order to optimize output and wellbeing on the work floor

- **Systematic Approach to Training** applied
 - Analysis of training needs
 - Design of training programmes
 - Development of training material
 - Evaluation of training



CPD for SCK•CEN employees Learning Centre

- Training activities in four categories
 - Safety, security, environment, health, quality
 - Scientific and technical competences
 - Personal and management competences
 - Your professional environment

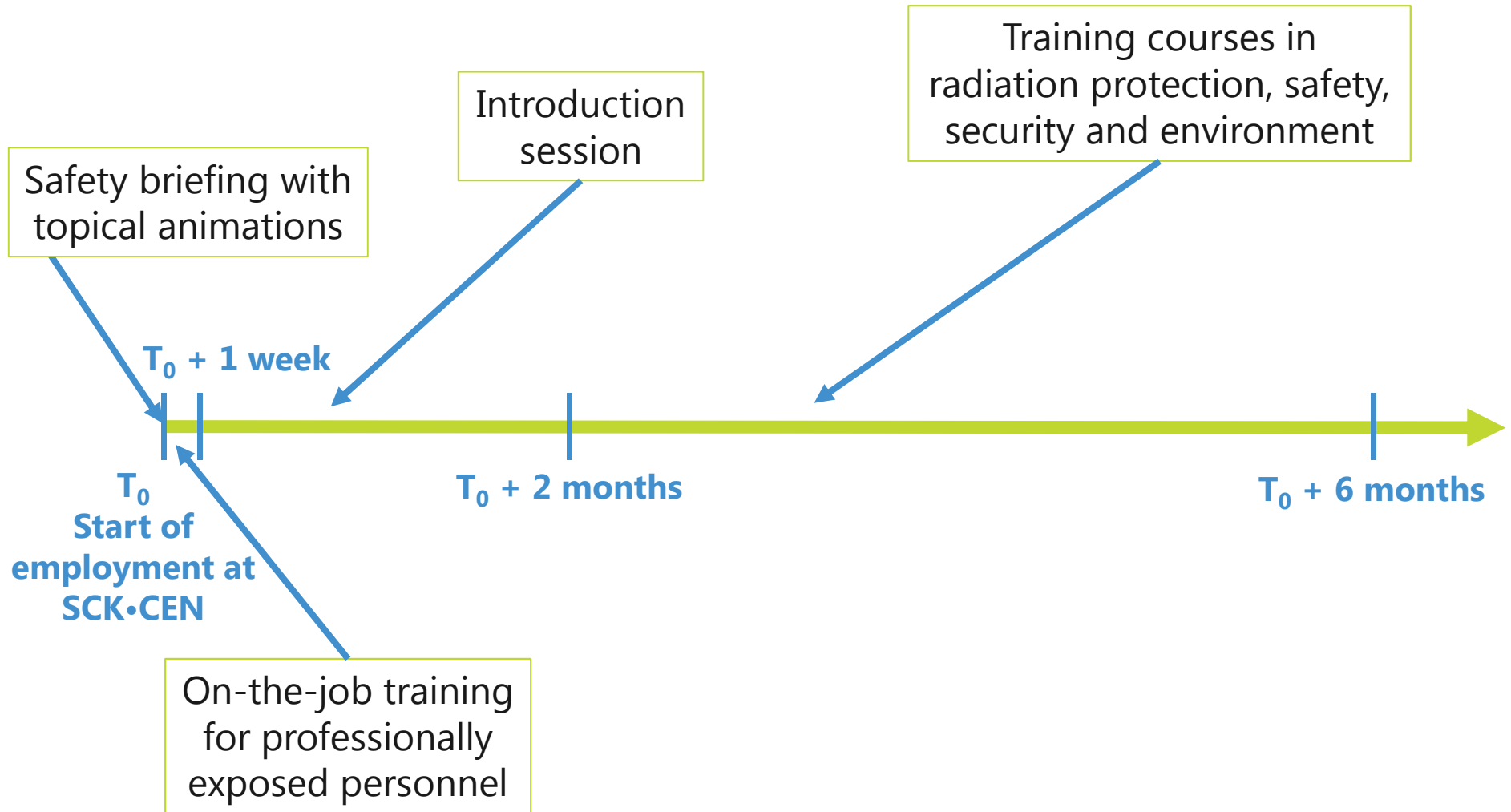


CPD for SCK•CEN employees Learning Centre

- **Personal supervision plan** for all new employees
 - Common training program
 - Job-specific training
 - e.g. glove box training
- Common training program in **radiation protection, safety, security and environment**
 - Close cooperation with Internal Service for Prevention and Protection at Work
 - For all employees, PhD students and all >6 months @ SCK•CEN
 - Mixed target public (level, language)
 - Content differs based on activities
 - Professionally exposed personnel (access to controlled areas)
 - Professionally not exposed personnel
 - Initial + refresher



Training program for new employees Overview





Training program for new employees

Safety briefing

- Safety briefing with topical animations
 - Before entering the technical domain
 - E-learning modules + brochure
 - Obligatory test with multiple-choice questions
 - Access to technical domain after successful evaluation (>70%)
 - Repeated annually by every member of staff + external workers
 - Content adapted to work being carried out





Training program for new employees OJT & introduction session

- Initial **on-the-job training** session for professionally exposed personnel
 - In the **first work week**
 - Guided tour in controlled area by Radiation Protection Officer
 - Focus = principles of good conduct in controlled area

- Introduction session for new employees
 - 2 hour **information session**
 - In the first months of employment
 - Topics
 - General information and professional environment at SCK•CEN
 - Safety management at SCK•CEN



Training program for new employees

Training courses

- Training courses in radiation protection, safety, security and environment
 - **Within 6 months** after start of employment
 - Offered in Dutch, French and English
- Follow-up of attendance in collaboration with Human Resources and Internal Service for Prevention and Protection at Work

Target audience	Radiation protection	Safety, security and environment
Professionally exposed personnel (controlled area)	8h	4,5h
Professionally not exposed personnel	3h	4,5h



Training course in radiation protection Approach

■ Topics

- Ionizing radiation: characteristics and applications
- Introduction detection and dosimetry
- Biological effects of ionizing radiation
- Legislation, safety and safety culture at SCK•CEN
- Radiation protection in practice



Training course in radiation protection Evaluation

- Kirkpatrick training evaluation model
 - Level 1: reaction
 - Level 2: learning
 - Level 3: behavior
 - Level 4: results
- Online feedback form (level 1, 2 and 3)
 - Immediately after training course
 - Evaluation of content, course material, trainer and organization
- Pre-post test (level 2)
 - Assess the learning of the participants
 - Test with 12 multiple choice questions



Future developments

- Conversion to **blended learning** pathway
 - Instruction videos, interactive animations and quizzes
 - Coupled to a face-to-face interaction session

- Embed training in **competence management** process

- Continue to collect data on **effectiveness** of training activities
 - Level 2: pre-post test
 - Level 3: impact survey

- Monitor **effect of conversion to blended learning**



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SCK•CEN

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Belgian Nuclear Research Centre

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