

## ETRAP Conference 2005

# Radiation Protection Training in the Medical Field the Swiss Concept

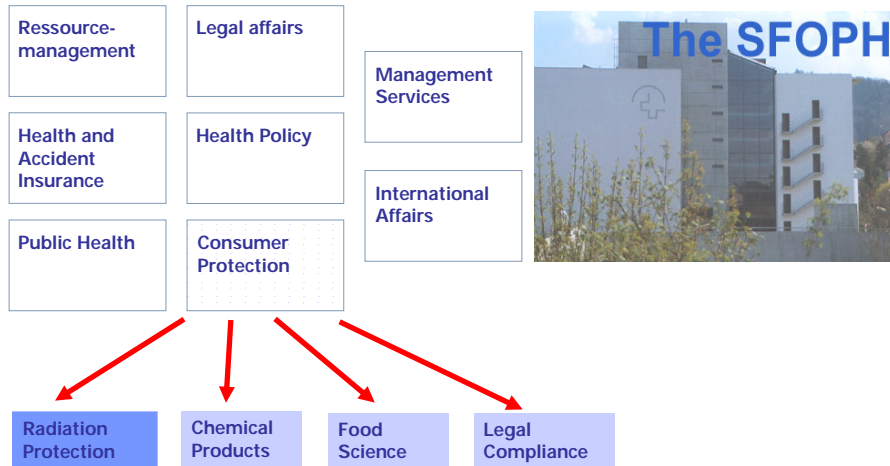
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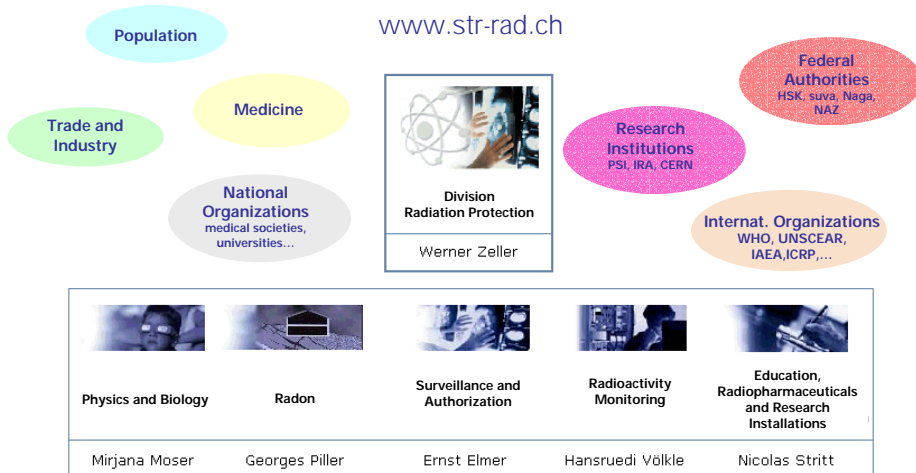
## Topics

- ▶ Presentation SFOPH, Division Radioprotection
- ▶ Legal basis
- ▶ Concepts of radiation protection training for doctors
- ▶ Challenges for the future
- ▶ Discussion

## The Swiss Federal Office of Public Health SFOPH



## SFOPH – Division Radiation Protection



## Legal basis of education in radiation protection

### Federal Constitution of the Swiss Confederation

Art. 119 of April 18, 1999

Within the limits of its powers, the Confederation shall take measures for the protection of health... It shall legislate on protection against ionizing radiation.

### Radiological Protection Act

Art. 6 of 22 June 1991

Only persons skilled in the art shall be permitted to carry out activities that involve a risk through ionising radiation.

### Radiological Protection Ordinance

Art. 10 of 22 June 1994

Persons using ionising radiation shall be required to have completed training corresponding to their activities and responsibilities.

### Ordinance on Education in Radiation Protection

Art. 1 of 15 September 1998

This ordinance shall regulate the education in radiation protection and the conditions for the recognition of an education

## Legal basis: general aspects

**Radiation protection in medicine aims at ensuring that no one (employees, patients, public) is exposed unnecessarily to radiation or receives unacceptable doses.**

- Any use of ionizing radiation, which could be a threat to people or the environment, must be authorized by the regulatory authority (licensing of installations or manipulation).
- Whoever applies ionizing radiation must have an adequate training to obtain the required **technical qualification** for his activity and responsibility.
- Whoever is in charge to ensure compliance with the regulations on radiation protection must be an **expert** in radiation protection.
- The license holder of an X-ray unit is responsible for ensuring compliance with the regulations on radiation protection.

## Technical Qualification for diagnostic x-ray applications

### application under responsibility of a doctor (radiographers,...)

- qualification included into professional education, or
- obtained by attending an accredited course

### application under own responsibility (doctors)

1. For low dose applications (thorax, extremities / dentists or chiropractors)
  - Included in medical degree
2. For high dose applications
  - corresponding specialist title\*, or
  - equivalent radiological training

\* In most curricula an expert training in radiation protection is mandatory

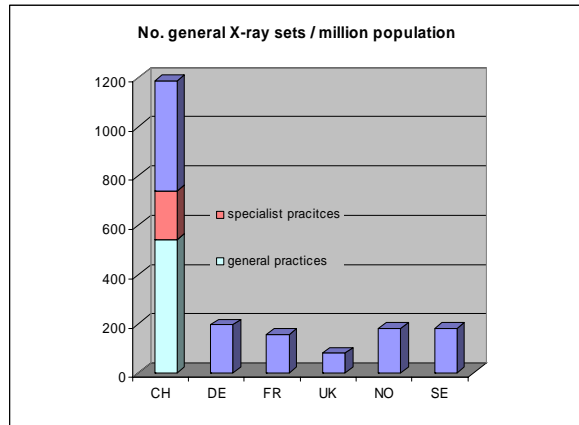
## Technical Qualification for other applications

### For therapeutical applications and the application of open radioactive sources:

- corresponding specialist title
- radiation protection expert course
- adequate practical training

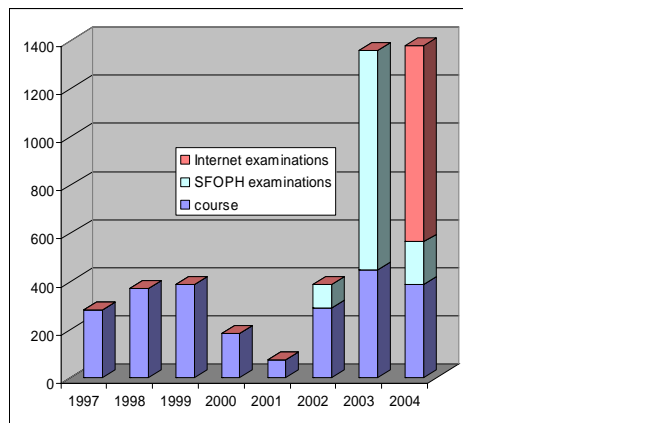
## Expert training for diagnostic x-ray applications

- mandatory for certain specialist titles (orthopedics, surgery,...)
- condition to obtain a license for an x-ray unit



## Implementation of expert training

- expertise is mandatory since 1994 (transition period 10 of years to fulfill obligation)
- course of 40 lessons with theoretical and practical elements and final examination
- exam only was restricted to doctors with an x-ray authorization before 1994



## Internet Examination

### Requirements

- minimal requirements of resources (operating system, web-browser, speed of internet-connection)
- Email address required
- no additional software required (cookies,...)
- identity check of candidate (done by SFOPH)
- technical identification of candidate's computer
- recording of each keystroke
- only one exam possible from a given computer within 24 hrs
- no interruption of exam allowed
- each exam was different, with 20 questions assigned randomly from a pool

Zeit	Frage	Antwort(en)
18.05.2004, 18:33	1	Wichtungsfaktor der Strahlenart
18.05.2004, 18:34	2	Aufnahme nach Neer (Schulter)
18.05.2004, 18:39	3	1 Promille
18.05.2004, 18:39	4	der Strahlenschutzsachverständige
18.05.2004, 18:41	5	Blei
18.05.2004, 18:43	6	lineares
18.05.2004, 18:43	7	Photonenstrahlung
18.05.2004, 18:43	7	Photonenstrahlung
18.05.2004, 18:43	8	Abdomen CT
18.05.2004, 18:45	9	< / +
18.05.2004, 18:45	10	+ weil +
18.05.2004, 18:50	11	müssen unter Berücksichtigung von Nachlieferung eingehalten werden (+)
18.05.2004, 18:50	11	dürfen in begründeten Fällen überschritten werden (-)
18.05.2004, 18:50	11	dürfen ohne Berücksichtigung des Optimierungsprinzip ausgeführt werden (-)
18.05.2004, 18:50	11	dürfen nicht überschritten werden (+)
18.05.2004, 18:52	12	ärztliche Sachkunde (+)
18.05.2004, 18:52	12	Bewilligung des BAG (+)
18.05.2004, 18:52	12	Dosimetrie (+)
18.05.2004, 18:52	12	Qualitätssicherungsprogramm (+)
18.05.2004, 18:54	13	für beruflich nicht exponierte Erwachsene (+)
18.05.2004, 18:54	13	für Patienten (-)
18.05.2004, 18:54	13	für beruflich exponierte Personen (+)
18.05.2004, 18:54	13	für Kleinkinder (-)
18.05.2004, 18:56	14	Messung der akkumulierten Dosis im relevanten Bildbereich (+)
18.05.2004, 18:56	14	Stabilisierung der Röhrenspannung (-)
18.05.2004, 18:56	14	Stabilisierung des Kathodenheizstroms (-)
18.05.2004, 18:56	14	Abschaltung des Spannungsgenerators (+)
18.05.2004, 18:58	15	Kann durch den Strahlenschutzsachverständigen des Betriebes durchgeführt werden (+)

## Internet Examination

### Experience

- widely accepted by doctors
  - no difference in pass/failure rate as compared to classical examination
  - significant reduction in administrative work load
  - model for further innovative tools**
- but
- some candidates prefer classical methods
  - cheating cannot be excluded completely

Kandidat	82743449	
Prüfung erstellt	02.02.2004, 17:02	stritt
Prüfung gestartet	17.02.2004, 18:33	Kandidat
Prüfung beendet	17.02.2004, 19:17 (Score: 15, Zeit: 43:19)	Kandidat
Prüfung beurteilt	(bestanden)	System
Zertifikat erstellt	20.02.2004, 12:16 (Zertifikat) (Badolinet) (Report)	RFurner
Status	zertifiziert	

zur dynamischen Sicht

Frage 1 (Thema 20: Wahl der Einstell-Parameter) 1 Punkt

Welche Röntgenaufnahme im Bereich des Schädels, der Extremitäten und des Thorax wird mit sehr hoher Spannung (125 kV) durchgeführt?

- Aufnahme nach Neer (Schulter)
- Knochel seitlich
- Schädel a-p
- Thorax seitlich

Frage 2 (Thema 1: Röntgenstrahlen, Materie) 1 Punkt

Woraus besteht Röntgenstrahlung?

- Photonenstrahlung
- Betastrahlung
- Protonenstrahlung
- Alphastrahlung

Frage 3 (Thema 6: Strahlenmesssystem) 1 Punkt

Das Ziel der Verwendung der Verstärkerfolie ist

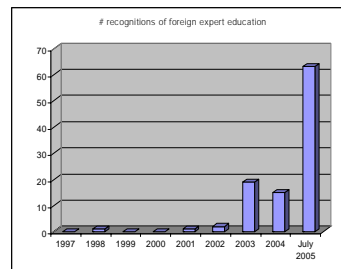
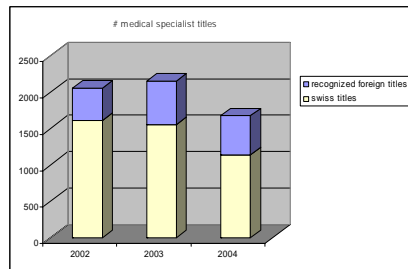
- die Verbesserung der Auflösung
- die Verbesserung des Kontrastes
- die Reduktion der Streustrahlung
- die Reduktion der Patientendosis

## A challenge for the future

### Recognitions of foreign educations in radiation protection

- June 2002 bilateral agreements CH-EU came into force; free movement of workers
- a foreign qualification in radiation protection is recognized if equal to a Swiss qualification
- Education in radiation protection is not harmonized internationally
  - big challenge to assess national concepts and requirements for equality

#### International cooperation between competent authorities is essential



## Radiation Protection Training in the Medical Field

Thank you for your attention

