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Schweizerische Gesellschaft für Strahlenbiologie und Medizinische Physik
Société Suisse de Radiobiologie et de Physique Médicale
Società Svizzera di Radiobiologia e di Fisica Medica

Swiss Society of Radiobiology and Medical Physics
Member of the European Federation of Organisations for Medical Physics (EFOMP) and the International Organization for Medical Physics (IOMP)

SSRMP position statement on art. 26 of the Radiation Protection Ordinance

Background

The Radiation Protection Ordinance (RPO, 814.501, April 26th 2017), complying with the Basic Safety Standard document (BSS) from IAEA and Euratom, adopted a risk-based approach. In this context, the legal requirements are different according to the risk associated to patient, personnel or population exposure. Specifically for patient exposure, the RPO, art. 26 states that the radiological procedures can be divided in three categories according to the radiation dose delivered to the patient:

1. Low-dose procedure: effective dose (E) lower than 1 mSv.
2. Medium-dose procedure: E between 1 mSv and 5 mSv.
3. High-dose procedure: E higher than 5 mSv.

The above categorization is used in the articles regarding the:

- Procedure of authorization (RPO, art. 14)
- Practices involving non-medical imaging exposure (RPO, art. 31)
- Documentation (RPO, art. 33; X-ray ordinance (XRO), art. 20)
- Medical physicist implication (RPO, art. 36)
- Pregnancy policy (RPO, art. 40)
- Radiological incidents (RPO, art. 50)

Objective

The statement aims to help medical physicists to classify frequent radiological procedures in the domain of radiology in the above categories.
The classification provided in the table below should be considered as a "rule of thumb" and should be carefully used. As technology and techniques evolve, typical effective doses are also expected to evolve. The categorization of the examinations should *not* be used for individual patient dosimetry. In such case, the medical physicist needs to estimate the specific patient dose, taken into account the patient characteristics and exposure parameters. Special sensitive cases, such as pregnant patients, pediatric patients, and practices involving non-medical imaging exposure, should be evaluated individually.

Bibliography

- https://www.bag.admin.ch/bag/de/home/gesund-leben/umwelt-und-gesundheit/strahlung-radioaktivitaet-schall/strahlenanwendungen-in-der-medizin/diagnostische-strahlenexposition-in-der-medizin.html
- http://www.eurosafeimaging.org/information-for-patients

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Category	**Radiological procedures**	**Legal implications**
Low-dose E<1mSv	• All X-ray radiographies except: abdomen, pelvis, lumbar spine radiography • Dental radiography • Bone densitometry • CT of lower limbs • Arthrography • Lymphangiography • Mammography*	• Procedure for getting the authorisation is simplified (RPO, art.14): the authorities check only if the documentation is complete. • A medical physicist shall be consulted at the request of the supervisory authority in case of complex technological applications or new employing techniques (RPO, art. 36) • If the uterus of a pregnant patient is located in the area under examination, the uterine dose should be documented (RPO, art.40) • Radiological incidents must be registered and analysed (RPO, art. 50)
Medium-dose 1mS<E<5mSv	• Abdomen, pelvis and lumbar spine radiography • Head CT • Neck CT • CT of upper limbs • Diagnostic procedures performed under fluoroscopy guidance (e.g. operating theatre)	• Practices involving non-medical imaging exposure are prohibited in these dose categories. If the criminal prosecution, security or customs authority ask for such a practice, the minimum dose to answer to the specific request should be used; if the exposure cannot be performed within the low dose limits, it must be justified and documented (RPO, art.31). • The dose received by the patient should be documented for all therapeutic and diagnostic exposures as well as mammography (RPO, art. 33). The list of parameters to register per modality is given in XRO, art. 20. • The medical physicist shall be involved in CT and IR procedures (RPO, art. 36). A medical physicist shall be consulted at the request of the supervisory authority in case of complex technological applications or new employing techniques in medium- and low-dose procedures (RPO, art. 36) • The physician that carries out radiological examinations must check if the patient is pregnant. Examination must be justified and during the optimization, the dose to both the mother and the conceptus must be considered. If the uterus of the pregnant patient is located in the area under examination, the dose to the uterus should be documented (RPO, art.40) • Radiological incidents must be registered and analysed. The supervisory authority must be notified within 30 days in case of: unforeseen exposures causing moderate or high damage to an organ, involuntary exposure of a patient or organ and in case of effective doses higher than 100mSv. (RPO, art. 50)
High-dose E>5mSv	• Chest CT • Abdomen CT • Pelvis CT • Therapeutic procedures performed under fluoroscopy guidance (e.g. therapeutic ERCP, etc.) • Interventional procedures under fluoroscopy guidance (e.g. cardiology, radiology, vascular) • Interventional procedures performed under CT guidance	

*As a rule, mammography may be considered as low-dose examination. However, the breast is the radiosensitive organ that receives the majority of the dose. Thus, for radiation risk estimations the glandular dose should be used rather than effective dose. Regarding the legal aspects, the mammography examination is an exception for the documentation request (RPO art 33; XRO art 20).