

The TSA approach to radiation safety

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H. Mansoux, NSRW/RIT

The Model Projects and the Milestones



- Milestone 1: **The establishment of a legislative and regulatory framework** - the most time consuming activity, involving the drafting, approval and/or promulgation of radiation, transport and waste safety **legislation and regulations**; the creation and empowerment of a national **effectively independent regulatory body** with sufficient adequately trained staff and resources; the establishment of a working system **of notification, authorization, inspection and enforcement** for the control of radiation sources, together with **a national register** of radiation sources and installations
- Milestone 2: **The establishment of occupational exposure control** - that included, inter alia, **individual and workplace monitoring, dose assessment, quality management**
- Milestone 3: **The establishment of radiation protection in medical exposure** - aimed at controlling exposure of patients in diagnostic radiology, radiotherapy and nuclear medicine, including the establishment of appropriate quality assurance programmes in radiation protection
- Milestone 4: **The establishment of public exposure control** - covering **radiation protection of the public and the environment**. It included programmes for the **registration, control and safe disposal of radioactive waste**, the **control of consumer products** containing radioactive substances, and **environmental monitoring**
- Milestone 5: **The establishment of emergency preparedness and response arrangements**- involving the **development of plans** and other arrangements and the allocation of adequate resources to ensure **the effectiveness of the national emergency management system, including relevant response organizations and the regulatory authority** to respond to radiological emergencies

From Milestones to

Thematic Safety Areas



- Reasons for change:
 1. The milestones had a sequential dimension
 2. The milestones did not reflect all relevant safety requirements in a structured way
 3. Recommendation on an independent panel review
 4. Harmonization & coordination of the model projects and the Action Plan for the Safety and Security of Radioactive Sources

The TSAs

7 Thematic Safety Areas (TSAs)

- **TSA 1:** Regulatory infrastructure
- **TSA 2:** Occupational Radiation Protection
- **TSA 3:** Radiation Protection in Medical Exposure
- **TSA 4:** Public and Environmental Radiation Protection, Radioactive Waste Management and Decommissioning
- **TSA 5:** Emergency Preparedness and Response
- **TSA 6:** Education and Training in Radiation Protection and Safety
- **TSA 7:** Transport Safety

TSA 1: Regulatory infrastructure



Responsibilities and functions of the government

1. National Policy and Strategy for Safety
2. Governmental and Legal Framework for Safety

Global safety Regime

3. International Instruments
4. Sharing of regulatory experience

Responsibilities and functions of the Regulatory Body

5. Organization and Management System of the Regulatory Body
6. Effective Independence of the Regulatory Body
7. Staffing and competence of the Regulatory Body
8. Authorization and Review and Assessment
9. Inspection
10. Enforcement
11. Regulations and Guidance
12. Safety Related Records and National Inventory of Radiation Sources

TSA 2: Occupational Radiation Protection



1. Governmental and legal framework specific for the control of occupational exposure

Control of occupational exposures in planned exposure situations

2. Requirements for monitoring and recording of occupational exposures
3. Responsibilities of employers, registrants and licensees
4. Compliance by workers
5. Cooperation between employers, registrants and licensees
6. Radiation protection programme
7. Assessment of occupational exposure and workers' health surveillance
8. Information, instruction and training
9. Conditions of service
10. Protection and safety for female workers and for persons under 18 years of age

Control of occupational exposures in emergency exposure situations

11. Protection of workers in emergency exposure situations

Control of occupational exposures in existing exposure situations

12. Protection of workers in existing exposure situations

TSA 3 : Radiation Protection in Medical Exposure



Governmental and legal framework for radiation protection in medical exposure

1. Legal and regulatory framework
2. Education, training and competence
3. Justification
4. Optimization
5. Female patients
6. Unintended or accidental medical exposures
7. Records

Patient protection in diagnostic and interventional radiology

8. Qualified medical personnel in diagnostic and interventional radiology
9. Optimization in diagnostic and interventional radiology

Patient protection in nuclear medicine

10. Qualified medical personnel in nuclear medicine
11. Optimization in nuclear medicine
12. Release of patient

Patient protection in radiotherapy

13. Qualified medical personnel in radiotherapy
14. Optimization in radiotherapy

TSA 4 : Public and Environmental Radiation Protection, Radioactive Waste Management and Decommissioning

Control of Public Exposure

1. Responsibilities of relevant parties specific to public exposure.
2. Monitoring programs with public protection purposes.
3. Protection of the public in existing exposure situations.

Radioactive Waste Management

4. Regulatory framework for radioactive waste management.
5. National policy and strategy for radioactive waste management.
6. Control in the generation of radioactive waste.
7. Processing of radioactive waste.
8. Storage of radioactive waste.
9. Waste acceptance criteria.
10. Approach to safety in the management of radioactive waste.

Decommissioning

11. Protection of people and the environment during decommissioning.
12. Legal and regulatory framework for decommissioning.
13. Accomplishment of decommissioning plans.

TSA 5: Emergency Preparedness and Response

1. Governmental, Legal and Regulatory Framework specific for emergency preparedness and response
2. National Emergency Management System
3. Roles, responsibilities and coordination of all involved organizations
4. Hazard assessment
5. Emergency identification, notification and activation of response
6. Definition of emergency planning zones and protection strategies
7. Protection of Emergency Workers and Helpers
8. Emergency response plans and procedures. On site emergency plans.
9. Response to nuclear and radiological emergencies
10. Arrangements for communicating with the public
11. Arrangements for waste management, termination and transition to existing or planning exposure situation
12. Provisions for requesting and offering international assistance
13. Provisions for resources, logistical support, training, exercises and quality management

Note: 25 Requirements in GSR Part 7

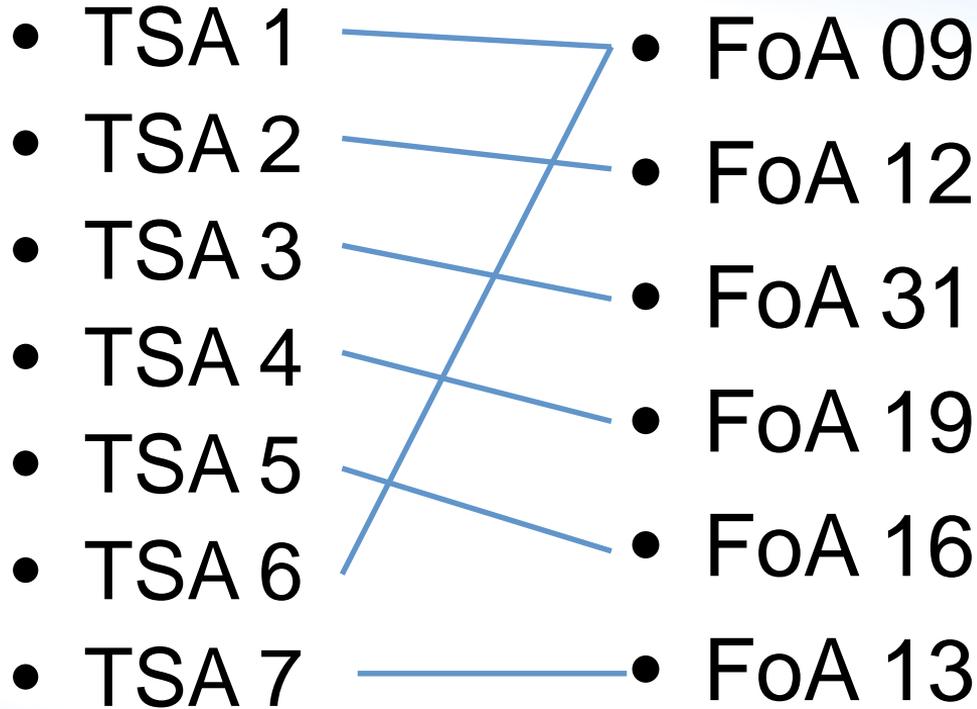
TSA 6 : Education and Training in Radiation Protection and Safety

1. Establishment of the education and training requirements for personnel technically competent to oversee the application of regulatory requirements.
2. Establishment of the education and training requirements for personnel with expertise to provide advice on radiation protection and safety.
3. Establishment of the education and training requirements for personnel of the regulatory body.
4. Verification of the compliance with the requirements for education and training in radiation protection and safety.
5. Application of the requirements for education and training in radiation protection and safety.
 - a. Training requirements in planned exposure situations.
 - b. Training requirements in emergency exposure situations.
 - c. Training requirements in existing exposure situations.
6. National policy and strategy for education and training in radiation protection and safety.

TSA 7: Transport Safety

1. Legal and Regulatory Framework
2. Staffing of the Competent Authority
3. Radiation Protection
4. Management Systems
5. Monitoring and Inspection of Transport Operations
6. Non-compliance Investigations and Enforcement Actions
7. Planning and Preparation for Transport Incidents and Accidents
8. Training of Persons Engaged in the Transport of Radioactive Material and Distribution of Information
9. International and National Liaison and Cooperation
10. Design Assessment
11. Manufacture of Materials and Packagings
12. Issuing of Approvals
13. Examination of Maintenance and Servicing Arrangements

Mapping TSAs and FoAs...



TC projects

- Initially:
 - one regional project per TSA
- Gradually:
 - Regional Projects on multiple TSAs
 - National projects on multiple TSAs

Conclusions

- The TSA structure is robust and has proven to be effective
- It translates safety requirements into practical elements
- It helps monitoring the status of the radiation safety infrastructure in MS
- It forms the basis for the CPS structure



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Thank you!

