National Liaison Officer Meeting

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Activities on Radiation, Waste and Transport safety

Eliana Amaral
Director

Division of Radiation, Transport and Waste Safety
Department of Nuclear Safety and Security

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International Atomic Energy Agency

Content

- Sources of Ionizing Radiation
- Risk and Protection
- IAEA Mandate on Safety
- Technical Assistance

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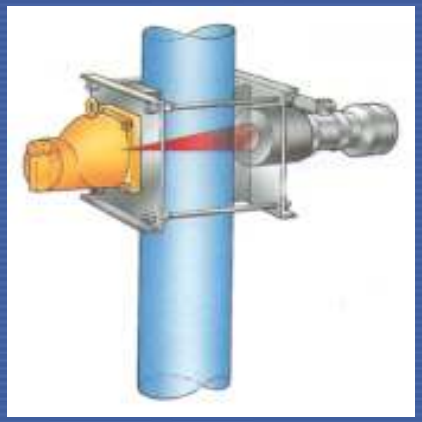
Radiation Generators and Radioactive Sources



Industrial gauges

Industrial radiography

Well logging

Cancer treatment

RTG's

Irradiators

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Management of NORM Waste and Residues (Naturally Occurring Radioactive Material)

Uranium Mine
tailings 100 hectares

900 hectares of
phosphogypsum residues

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Risk and Protection

- Accidents:
  - with sources during use
  - with sources not in use (loss of control of sources)
- Unnecessary exposures:
  - not justified
  - not optimized
  - Legacy activities

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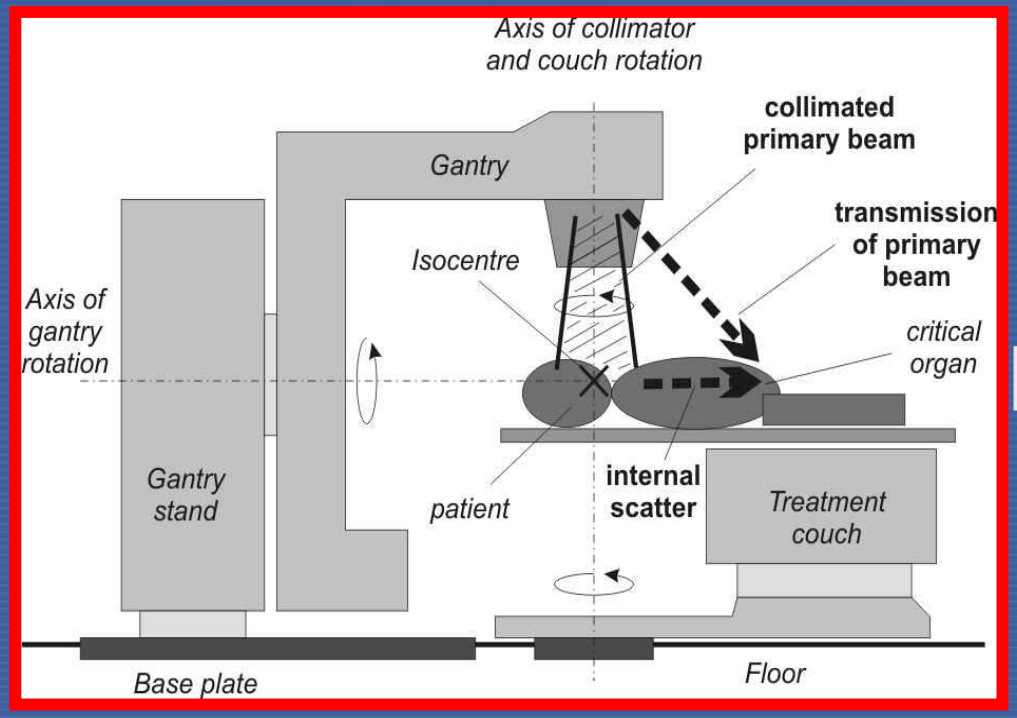
Radiotherapy Patients Overexposed



Incorrectly calibrated

Co-60 teletherapy unit

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Orphan Source From Industrial Radiography

Ir-192 source used for industrial radiography became detached from the camera

A welder finds unshielded source, picks up source and puts it in the back right pocket of his trousers

Severe radiation burns and amputation of a leg

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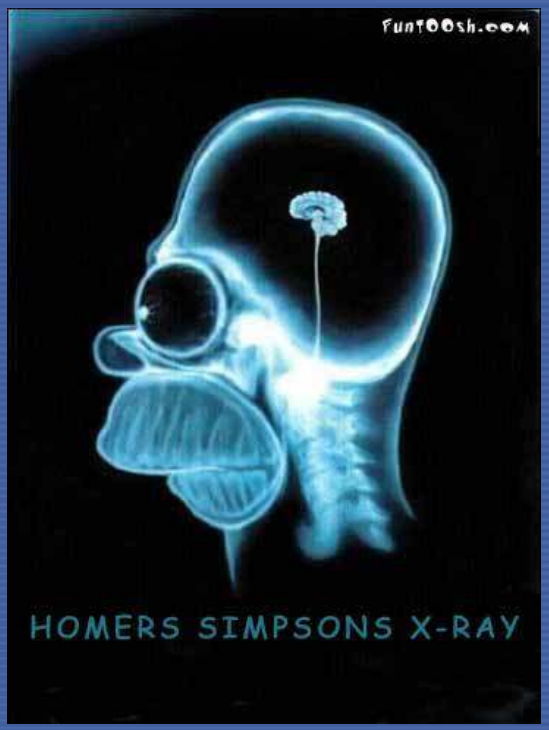
Unnecessary Exposure to Radiation (1)

Inadequate protection equipment

Whole-body CT scan sold as a “preventative health measure”

Workers and public scanned for security



Frivolous application

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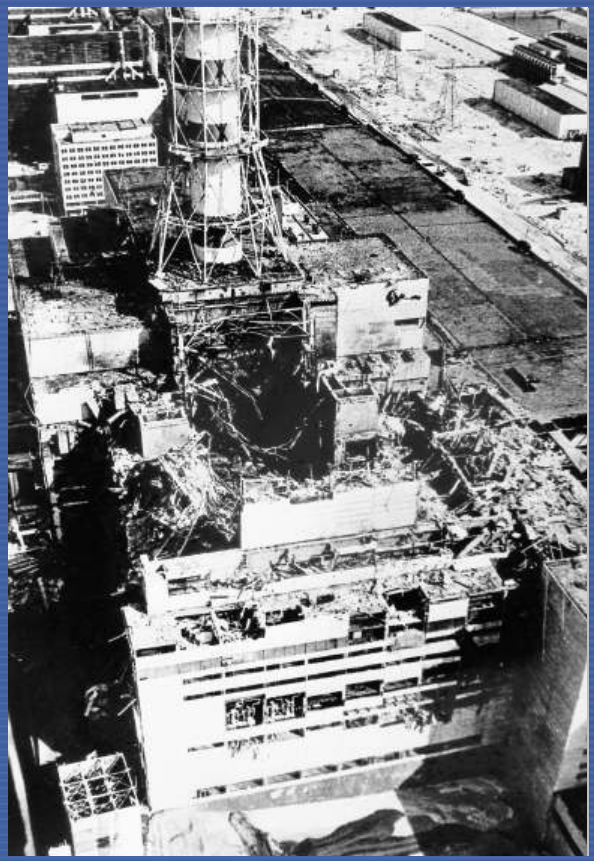
Unnecessary Exposure to Radiation (2)



Mismanagement of radioactive effluents and waste, mine residues, consequences of nuclear and radiological accidents

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What can be the reasons?

- Human error (complacency)
- Lack of defense-in-depth
- Ineffective safety systems (not provided or not maintained)
- Lack of monitoring
- Lack of procedures (or not followed)
- Poor maintenance of devices
- Lack of supervision
- Lack of education and training
- Lack of safety culture
- Ineffective regulatory control…..

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How can IAEA help?

- Facilitate international undertakings such as the Code of Conduct, Joint Convention
- Collect and disseminate information on accidents and unnecessary exposures
  - International Conferences
  - Reports
- Develop Safety Standards: Global Safety Regime

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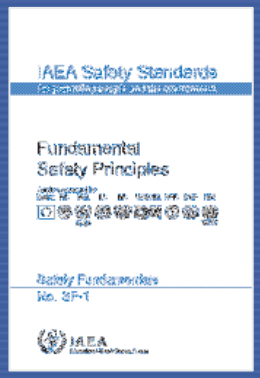
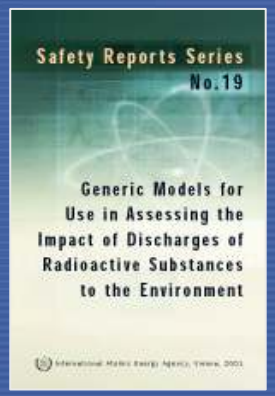
The IAEA Safety Standards

- The safety standards series comprises three levels of documents:
  - **Safety Fundamentals**
  - **Safety Requirements**
  - **Safety Guides**
  - **Cf. Supporting documents**
    - **Safety Reports**
    - **Technical Reports**
    - **TECDOCs**





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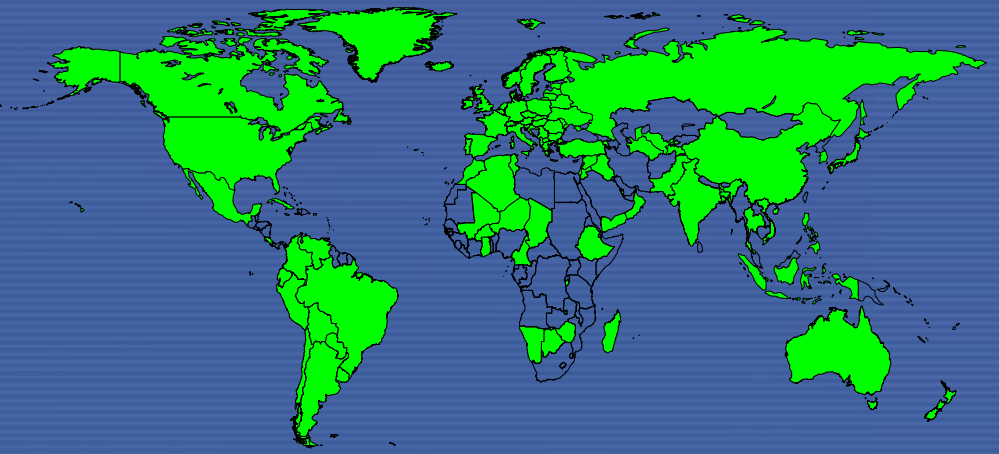
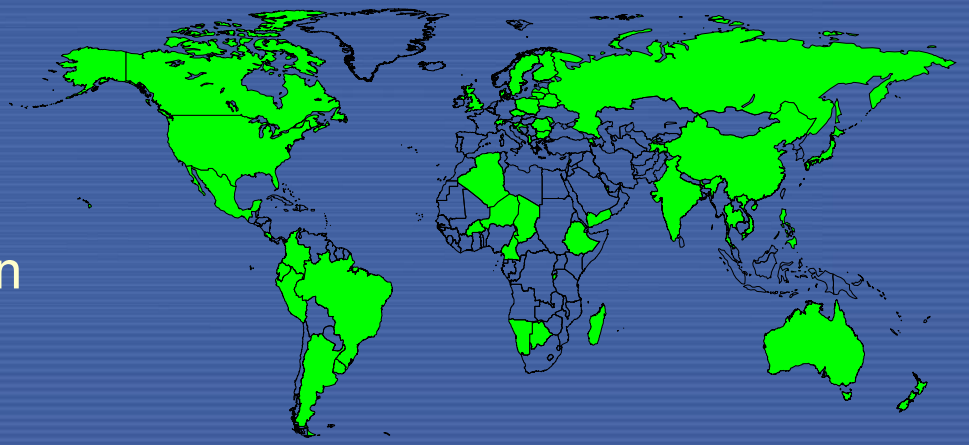
Political support - November 2009

Code of Conduct:
94 States have provided written political support



Import/export Guidance:
52 States have made the additional political commitment for its harmonised implementation



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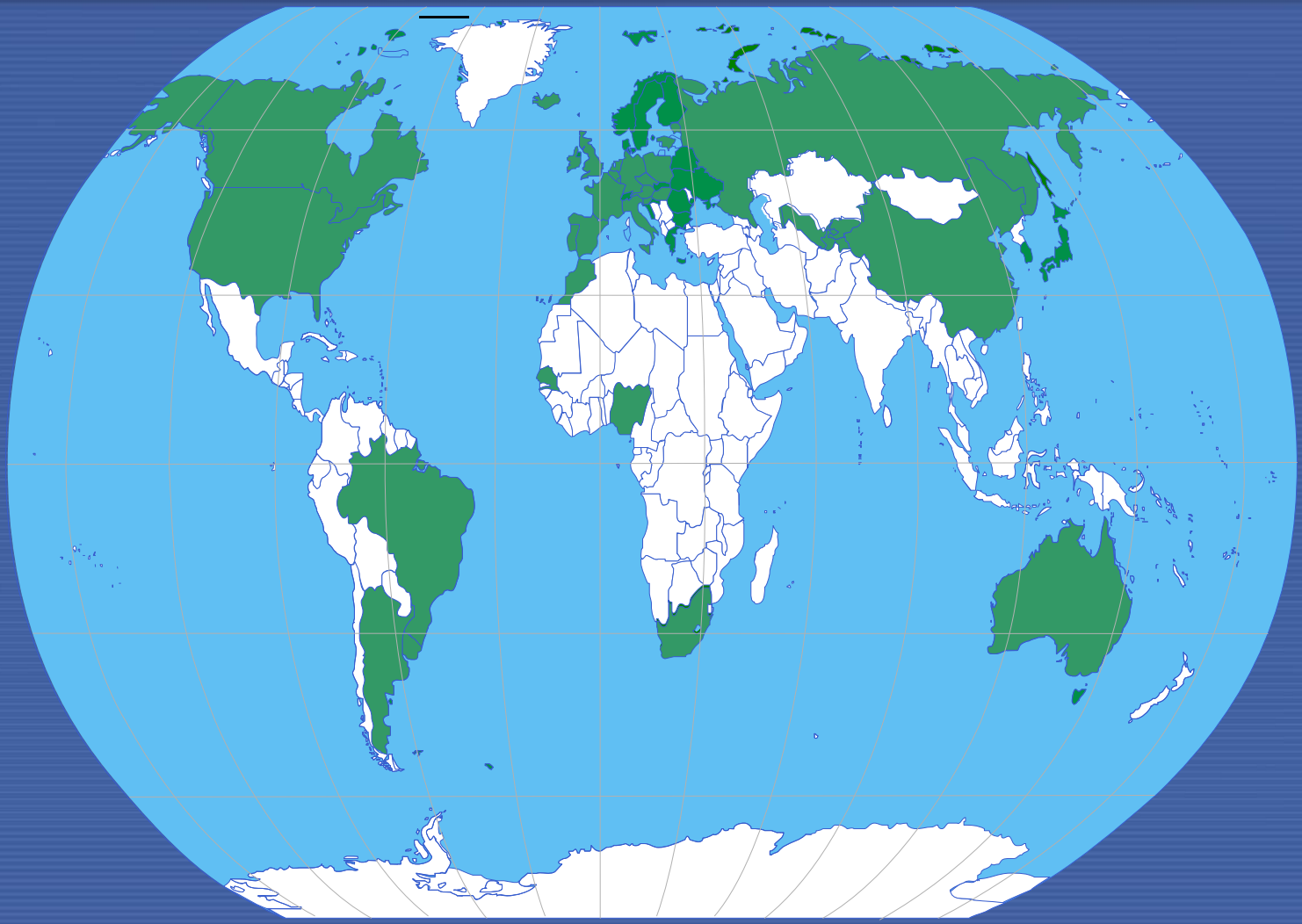
Joint Convention
49 Contracting Parties as May 2009



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IAEA can also help…

- Assist Member States to:
  - Apply the Safety Standards and Implement the Code of Conduct and imp/exp controls
  - Establish and maintain an effective national regulatory infrastructure
  - Develop sustainable education and training
  - Appraise through review services such as RaSSIA/IRRS
  - Regain control on orphan and vulnerable sources

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Radiation and Waste Safety Infrastructure Areas

Thematic Safety Areas (TSA) :

- **TSA 1: Regulatory Framework**
- **TSA 2: Occupational Radiation Protection**
- **TSA 3: Patient Radiation Protection**
- **TSA 4: Public Radiation Protection**
- **TSA 5: Emergency Preparedness and Response**
- **TSA 6: Education and Training**

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National Regulatory Infrastructure (TSA 1)

- Focuses on establishing an independent and functional regulatory infrastructure in a Member State (MS) so that it meets IAEA Safety Standards.
- To improve the regulatory infrastructure for the safety and control of radiation sources in participating countries;
- to establish and develop adequate and effective regulatory mechanisms for the control of radiation sources in new Member States; and
- to harmonize and streamline national capabilities for regulatory control in compliance with the requirements of the BSS, the GS-R-1, and the provisions of the Code of Conduct.

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National Regulatory Infrastructure (TSA 1)

It include 14 Elements:

1. Legislation,
2. Regulations and Guidance,
3. Regulatory Body Establishment and independence
4. Regulatory Body Staffing and Training
5. Regulatory Body Funding
6. Coordination and Cooperation and the National Level
7. International Cooperation
8. Notification and National Register of Radiation Sources
9. Authorization
10. Safety and Security of Radiation Sources
11. Inspection
12. Enforcement
13. Information management
14. Quality Management

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Assisting States Establish a Regulatory Framework for Radiation, Transport & Waste Safety

The Agency has developed:

- The Integrated Regulatory Review Service (IRRS) for peer reviewing nuclear and radiation safety infrastructures replacing "RaSSIA" and "IRRT".
- The Regulatory Authority Information System (RAIS)
- Radiation Safety Regulators Network (*RaSaReN*) *(now being replaced by the new "Regulators' Network")*
- Self-assessment Methodologies and Tools (SAT)

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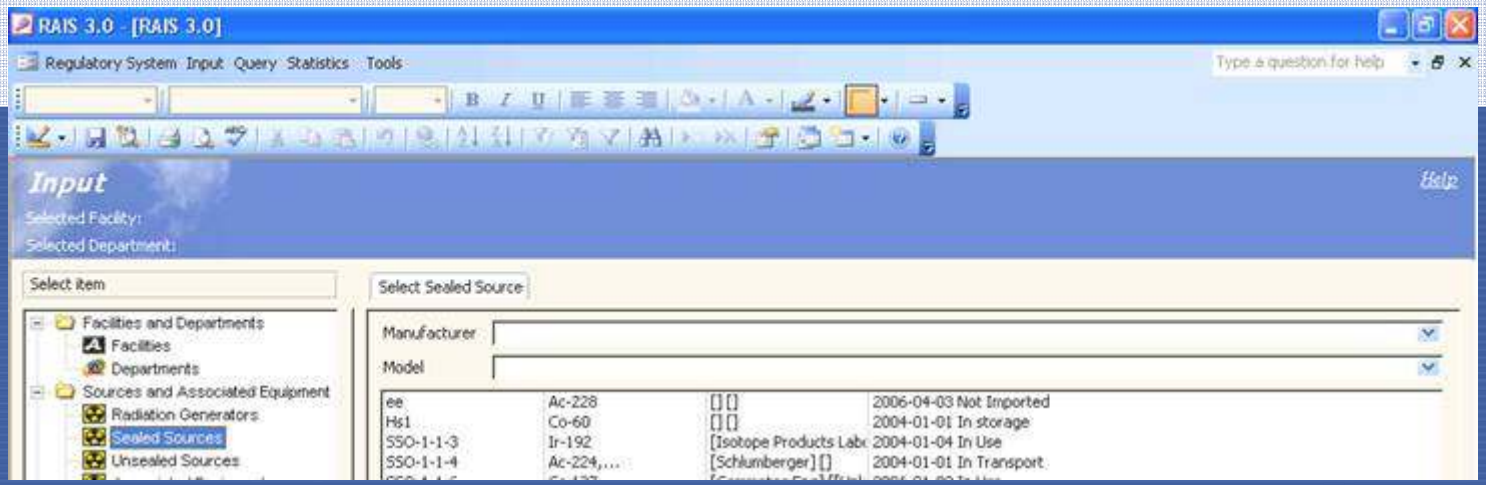
Tool for Regulators: Regulatory Authority Information System (RAIS)

Database for regulators to facilitate:

- National inventory of radiation sources
- Management of daily regulatory activities: authorization, inspection, enforcement. etc.



- With effect from mid 2009, available in a Web-based version also.
- Available in Arabic, Chinese, English, French, Spanish, Russian
- Training and technical assistance provided by IAEA

Occupational Radiation Protection (TSA 2)

The Objectives include:

- To establish and develop a national programme for ORP in compliance with the requirements of the BSS and relevant safety guides;
- To improve individual and workplace monitoring, including classification of areas, local rules and establishment of investigation levels, for the protection of personnel occupationally exposed to radiation; and
- To harmonize and streamline national capabilities for occupational exposure control, and improve the provision of dosimetry services.

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Occupational Radiation Protection (TSA 2)

Elements of TSA 2 include:

1. Regulatory infrastructure for occupational radiation protection
2. Individual monitoring for external radiation sources
3. Individual monitoring for intake radionuclides
4. Workplace monitoring
5. Service providers
6. Implementation of the requirements by end users
7. Occupational exposure to natural sources

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INTERCOMPARISON Exercises

- Intercomparison Exercises for:
  - External Monitoring, and
  - Internal Monitoring

- Coordinated Research Programmes are conducted regionally on Intercomparison for Individual Monitoring (external and internal).

- Upgrading national ORP capabilities to meet the Standards

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Patient Radiation Protection
Thematic Safety Area (TSA) 3

Elements of this TSA include:

1. Regulations
2. Diagnostic Radiology - qualified experts
3. Diagnostic Radiology - optimization
4. Optimization in radiography and fluoroscopy
5. Optimization in mammography
6. Optimization in computed tomography
7. Interventional procedures using X-rays – qualified expert
8. Interventional procedures using X-rays – optimization
9. Nuclear Medicine – qualified experts
10. Nuclear Medicine – optimization
11. Radiotherapy – qualified experts
12. Radiotherapy – optimization

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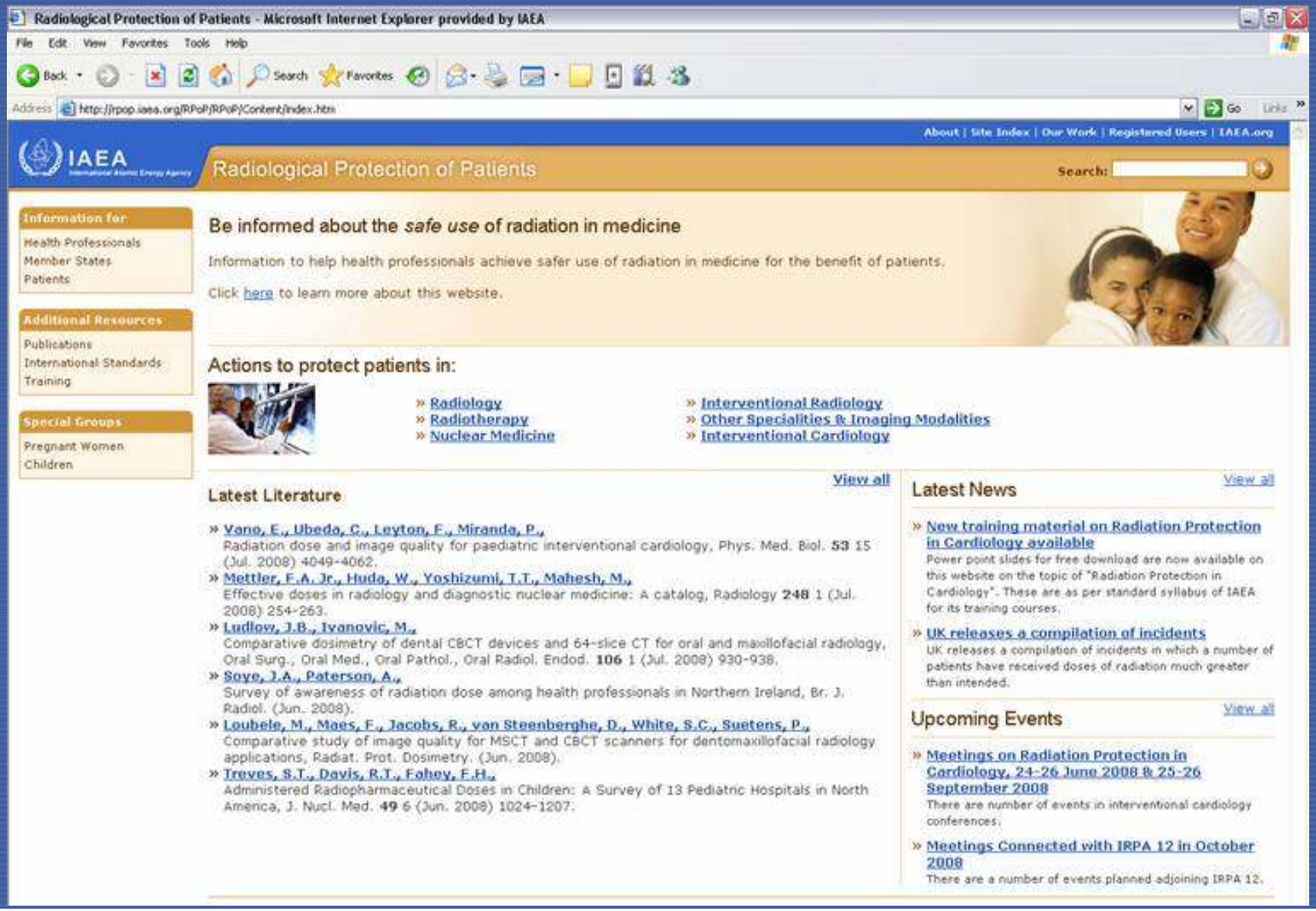
Radiological Protection of Patients
rpop.iaea.org



Public Radiological Protection (TSA 4)

To establish, develop and consolidate an adequate national systems for public exposure control including:

- Sustainable regulatory control at design, operation and decommissioning stages of facilities, monitoring of public exposure,
- Control of discharges, source and environmental monitoring, control of foodstuffs and selected commodities,
- Control of exposure as a result of past practices and accidents, remediation,
- Control of exposure to radon and other natural sources,
- Control of materials for recycling, safe transport of radioactive material, radioactive waste and management and decommissioning

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Public Radiological Protection (TSA 4)

It includes the following elements:

1. Regulatory Framework for the Control of Public exposure
2. Control of Discharges
3. Environmental monitoring
4. Control of foodstuffs and selected commodities
5. Control of chronic exposures (radon, NORM and past practices)
6. Control of radioactivity in materials for recycling.
7. National waste management policy and strategy.
8. National waste management and decommissioning legislative and regulatory framework.
9. General safety provisions for waste management and decommissioning.
10. Predisposal management of waste management
11. Clearance regime for waste management
12. Storage of waste management
13. Disposal of waste management
14. Decommissioning of nuclear and other facilities containing waste management.
15. Remediation.

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Education and Training (E & T)
Thematic Safety Area 6

The Objectives include:

- To support the target countries in their effort to attain a core number of managers, qualified experts, trainers and specialists in radiation protection; and
- To develop adequate expertise and skills required for sustainable national radiation protection infrastructure

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Elements of TSA 6

1. Regulatory Requirements for Education and Training in Radiation Protection
2. Strategy for Building Competence in Radiation Protection
3. National Education and Training Infrastructure in Radiation Protection
4. National Education and Training Programme in Radiation Protection
5. National Education and Training Programme Implementation

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TSA 6 - Output

- Regulations requiring Education & Training of occupationally exposed
- Provision for continuous basic professional training in radiation protection
- Train the Trainers programmes in place
- Agency developed training packages available in the languages of training
- Assessment mechanism for training centres and programmes

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Transport Safety

- Producing Safety Requirements and guides for transport of radioactive material, working with other UN specialised agencies and Member States
- TranSAS– providing an appraisal service that looks at both regulators and operators involved in transport
- Supporting Member States where appropriate(e.g. by maintaining a public list of competent authorities).
- Co-ordinating work addressing the increasing problem shipping radioactive material, including TC shipments.

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NSRW - summary

Working for, and with, Member States

to establish a global safety regime

that ensures the protection of

workers, patients,

the public and the environment

from the adverse effects of ionizing radiation

http://www-ns.iaea.org/home/rtws.asp

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Thank You!
E-mail: E.Amaral@iaea.org