

# **International Conference on Occupational Radiation Protection: Enhancing the Protection of Workers - Gaps, Challenges and Developments**



## **Technical Cooperation Programme and the Occupational Radiation Protection Appraisal Service.**

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Radiation Safety Technical Services Unit  
Radiation Safety and Monitoring Section



**IAEA**

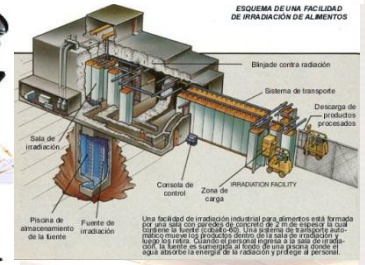
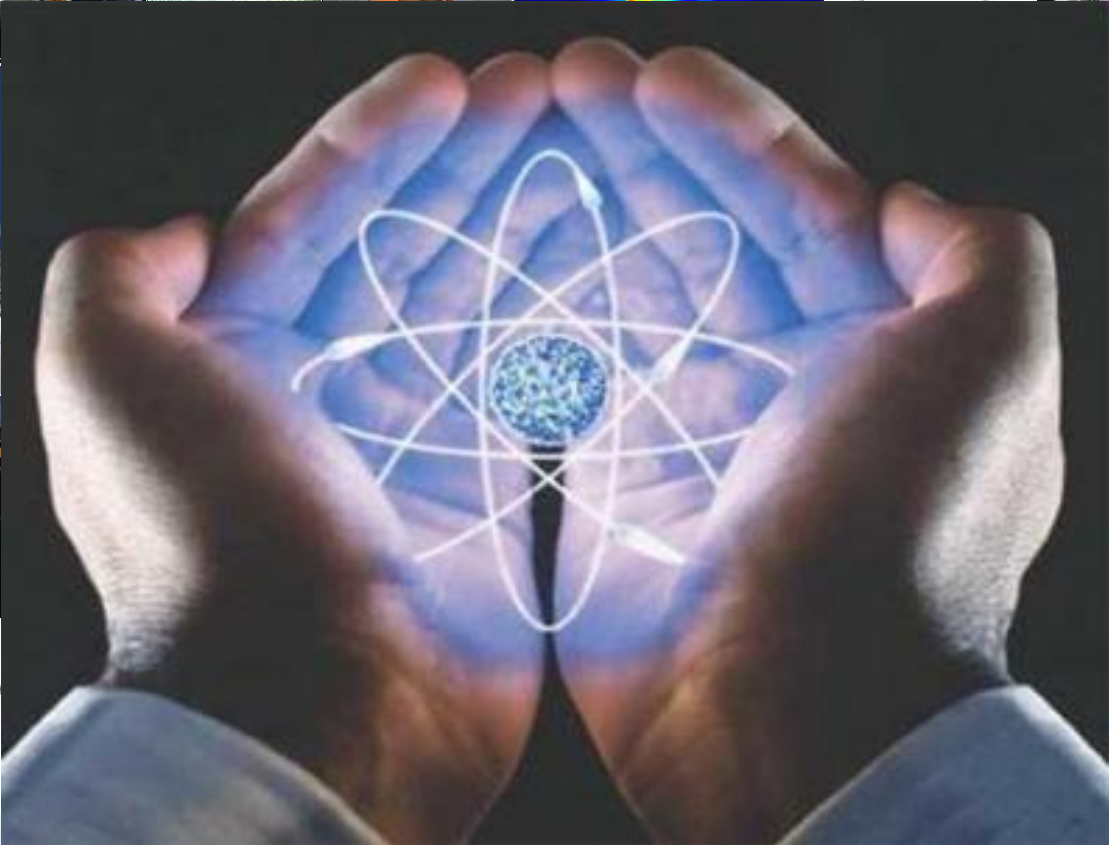
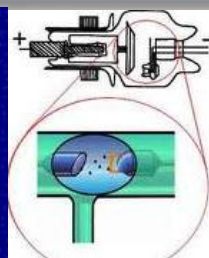
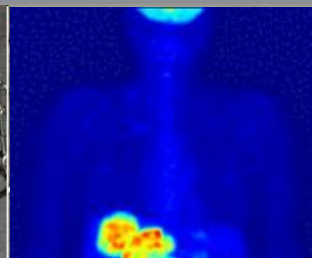
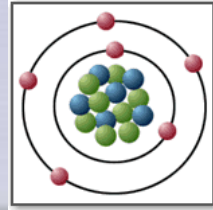
International Atomic Energy Agency

# Content

- IAEA Safety Functions.
- Technical Cooperation.
- Radiation Safety Information Management System- RASIMS
- ORP Appraisal Service- ORPAS process.
- Main Findings
- Improvements possibilities



# Occupational Radiation Protection



# IAEA Safety functions

## INTERNATIONAL MECHANISMS FOR APPLYING STANDARDS

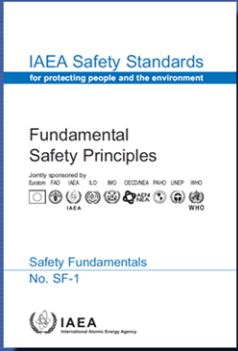
Rendering  
**RADIATION  
SAFETY  
SERVICES**

Providing  
**TECHNICAL  
COOPERATION**

For  
**INFO  
EXC**

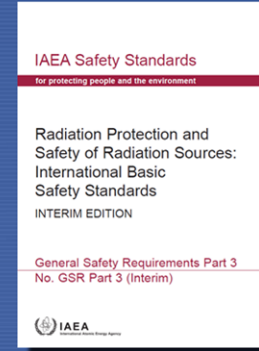
### Safety Fundamentals

*Principles*



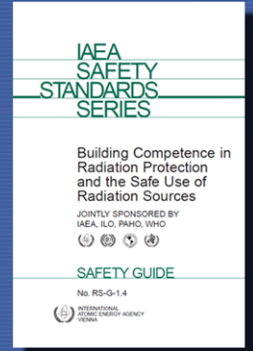
### Safety Requirements

*"Shall"*

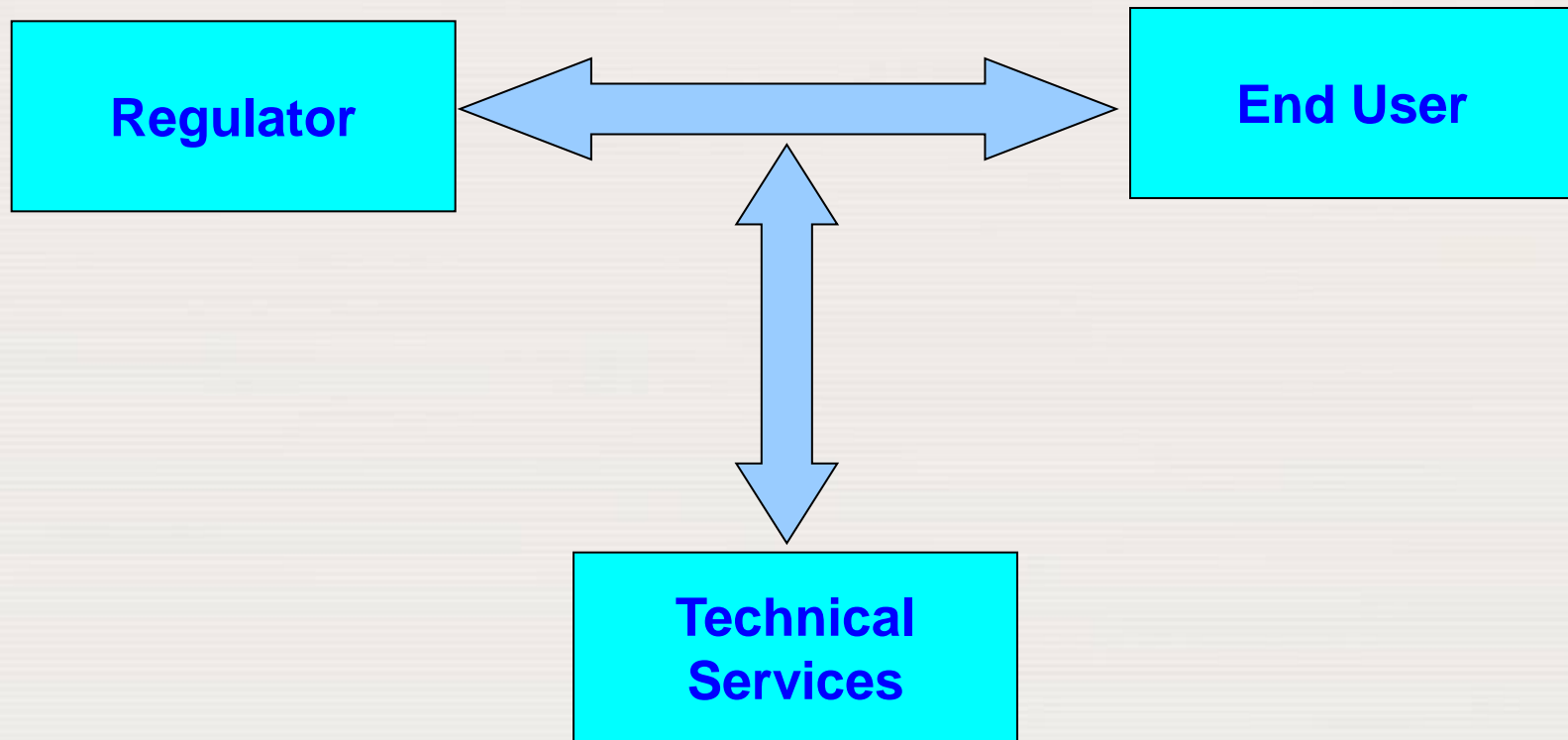


### Safety Guides

*"Should"*

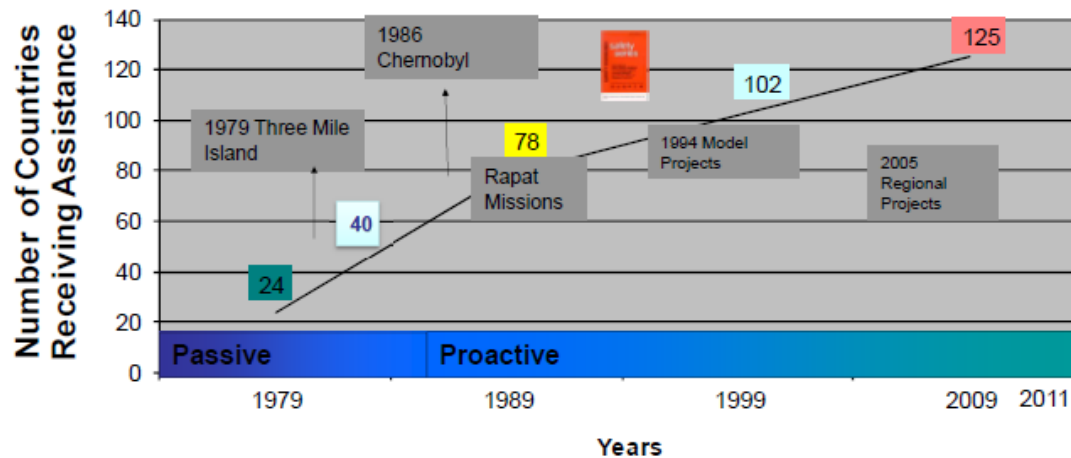


# Occupational Radiation Protection in Member States





## Agency Assistance in Radiation Safety (1970- 2011) Field 9.



## The Agency's Technical Cooperation Programme in Figures (as at 31 December 2013)

2013 target for voluntary contributions to the Technical Cooperation Fund (TCF):

**€71 443 750**

Rate of attainment on payments (pledges) at the end of 2013:

**91.9% (92.8%)**

New resources for the technical cooperation (TC) programme: **€78.2 million**

Technical Cooperation Fund\*: **€66.3 million**

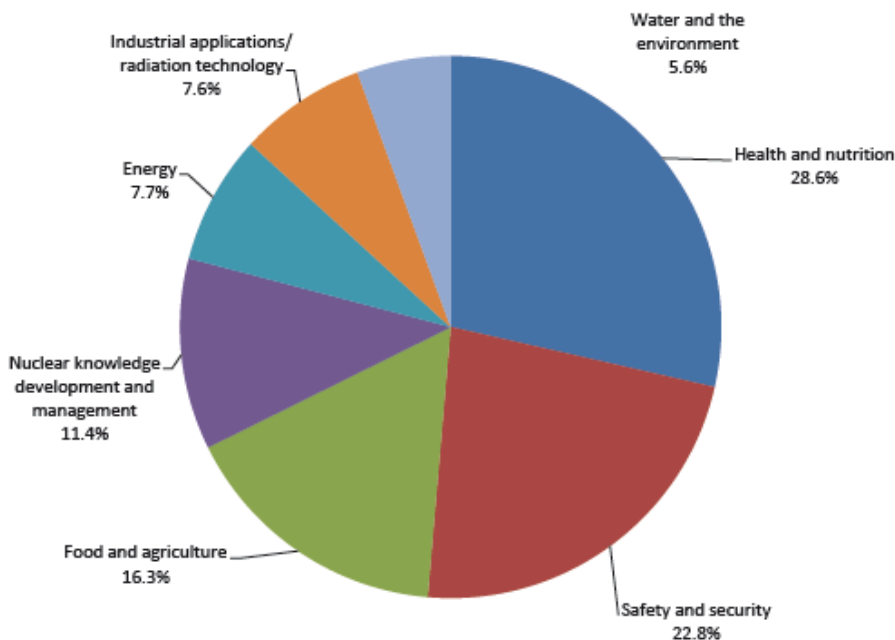
Extrabudgetary resources\*: **€10.7 million**

In-kind contributions: **€1.2 million**

TCF Implementation rate: **83.7%**

TC 2013 year-end budget\* (TCF, extrabudgetary resources and In-kind contributions):

**€113.7 million**



**124** countries/territories receiving support

**13** Country Programme Frameworks (CPFs) signed in 2013

**123** Revised Supplementary Agreements (as at 31 January 2014)

**91** CPFs valid as at 31 December 2013

**5331** meeting participants and other project personnel assignments

**2005** fellowships and scientific visits

**3509** expert and lecturer assignments

**3041** participants in training courses

**209** regional and interregional training courses

**2014- 136 Member States receiving assistance in ORP with regionals or national projects**

# Elements of Projects on Occupational Radiation Protection

**2006-2011**

**2012-2013.....**

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



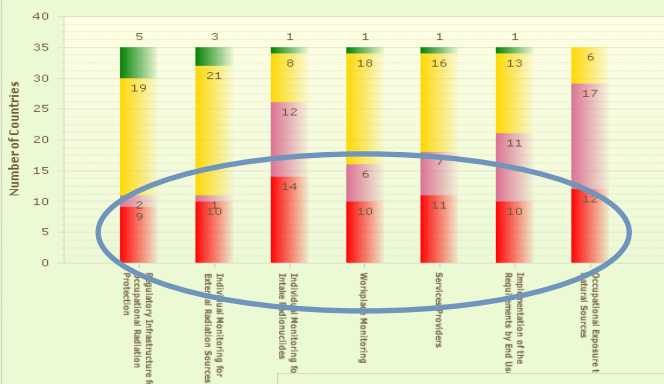
1. Technical and Scientific Organizations.TSO
2. Implementation of Radiation Protection programmes in **Medical Applications.**
3. Implementation of Radiation Protection programmes in **Industrial Applications & NORM.**
4. Implementation of Radiation Protection programmes in **Production of Isotopes.**
5. Implementation of Radiation Protection programmes in **Nuclear Fuel Cycle**

# RASIMS

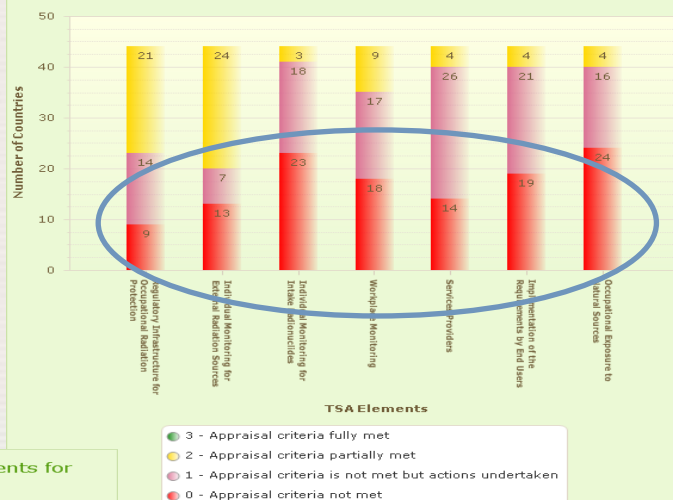
## Radiation Safety Information Management System

A web-based platform that enables Member States and the IAEA Secretariat to jointly collect, analyse and view information regarding the national infrastructure for radiation and waste safety

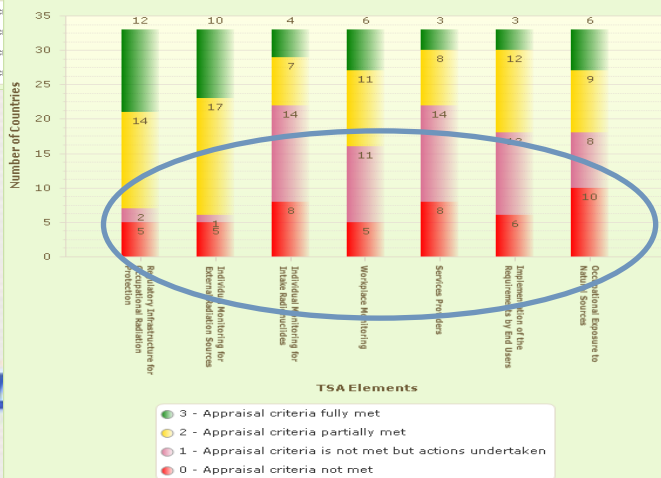
Achievement towards Establishing Infrastructure Elements for all PI in Asia & the Pacific - TSA2



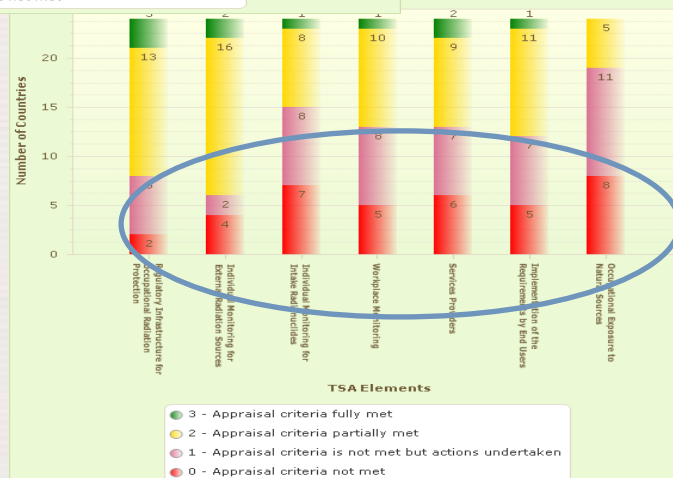
Achievement towards Establishing Infrastructure Elements for all PI in Africa - TSA2



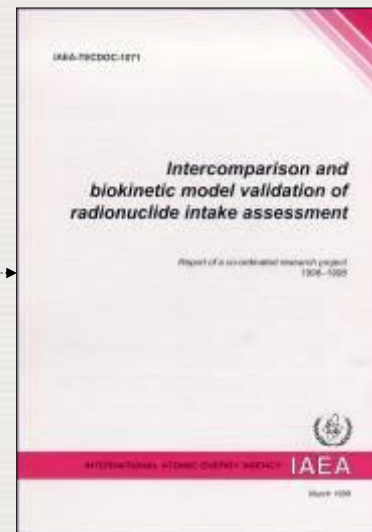
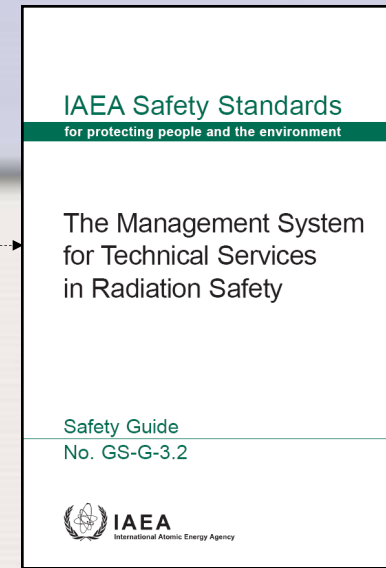
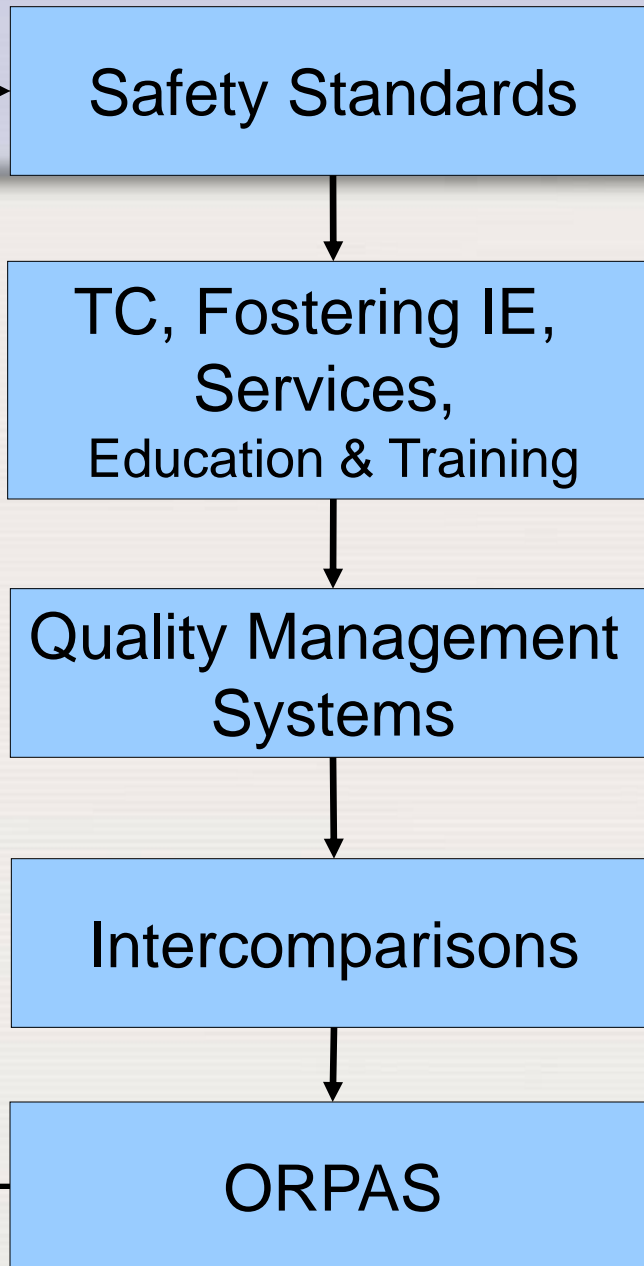
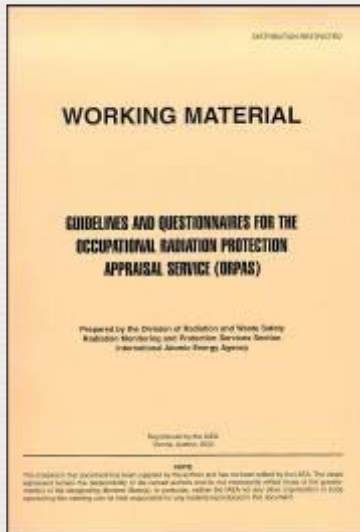
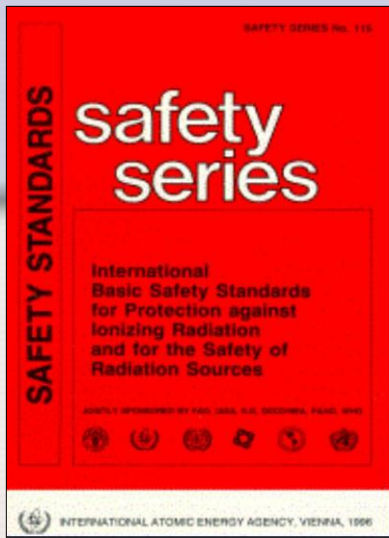
Achievement towards Establishing Infrastructure Elements for all PI in Europe - TSA2



Achievement towards Establishing Infrastructure Elements for all PI in Latin America & the Caribbean - TSA2







**O**CCUPATIONAL  
**R**ADIATION  
**P**ROTECTION  
**A**PPRAISAL  
**S**ERVICE

# Key Objectives of ORPAS

- Provide the host country with an **objective assessment** of the provisions for occupational radiation protection
- Identify the **strengths** in the host country which are unique and worthy of bringing to the attention of others
- Promote the use of **self-assessment** by the host country
- Identify areas where performance should be **improved** to meet international standards
- Make recommendations on actions to be taken to achieve such improvements

# ORPAS Questionnaires

## Regulatory Authority

- 1. Legal Regulatory Framework.docx
- 2. General Responsibilities of Registrants, Licensees and Employers.docx
- 3. General Responsibilities of Workers.docx
- 4. Requirements for Radiation Protection Programmes.docx
- 5. Monitoring Programmes Technical Services.docx

## TECHNICAL SERVICES

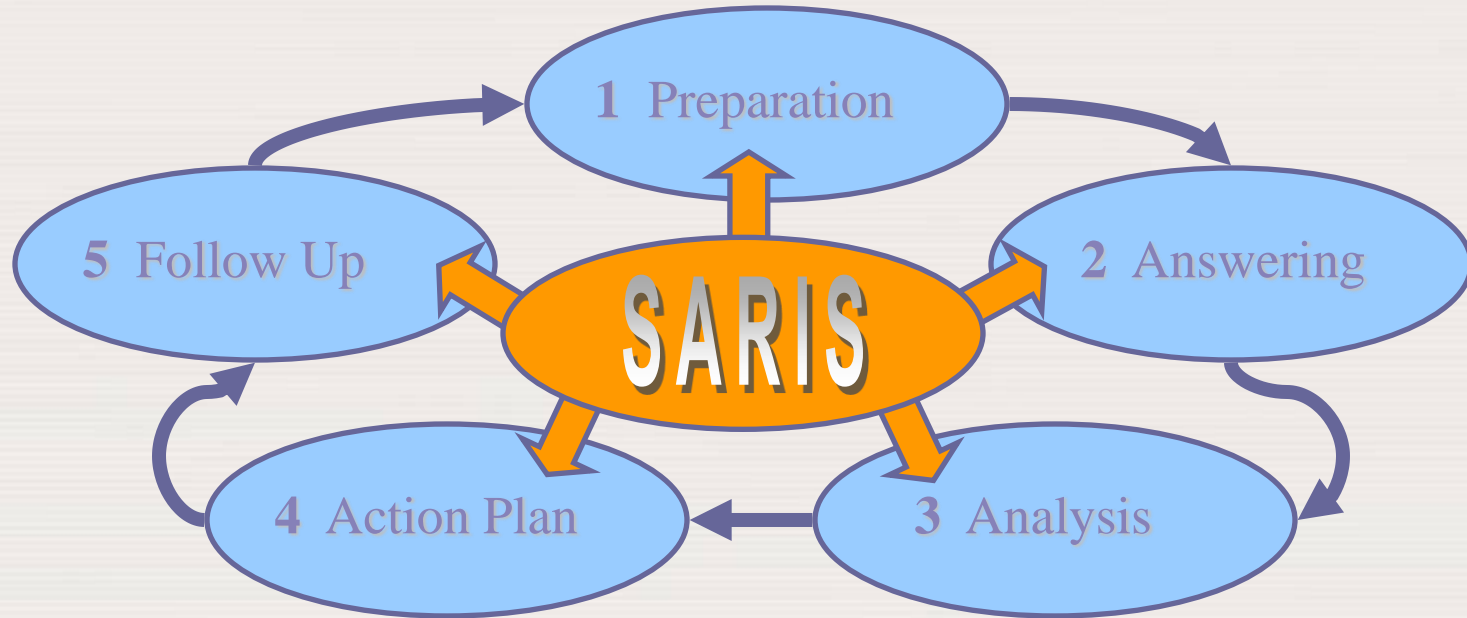
- 1. General Requirements for the Approval of External Dosimetry Services.docx
- 2. General Requirements for the Approval of Internal Dosimetry Services.docx
- 3. General Requirements for the Approval of Workplace Monitoring Services.docx
- 4. General Requirements for the Provision of Technical Services.docx
- 5. Basic Details of Dose Record Keeping Service.docx
- 6. Dose Record Keeping Service Approval.docx
- 7. Dosimeter Performance Testing.docx
- 8. Quality Assurance - General Requirements.docx
- 9. Quality Assurance Dose Record.docx
- 10. Quality Assurance - Technical Services.docx
- 11. Workplace Monitoring (Radiation Contamination) Quality Assurance Specific Requirements.docx
- 12. Testing and Use of Radiation Measurement Equipment.docx
- 13. External Dosimetry Services Provided.docx
- 14. Dosimetric Specifications.docx
- 15. Dosimeter Type Testing.docx
- 16. Quality Assurance - External dosimetry.docx
- 17. Dosimetric quantities and calibration procedures.docx
- 18. Internal Dosimetry Assessment Methods Provided.docx
- 19. Direct Measurement Methods.docx
- 20. Indirect Measurement Methods.docx
- 21. Biokinetic Models for Internal Dosimetry and Interpretation of Measurements.docx
- 22. Quality Assurance - Internal Dosimetry.docx
- 23. General Requirements for Workplace Monitoring (Radiation Contamination) Programme.docx
- 24. Workplace Monitoring (Radiation Contamination) Services Provided.docx

END  
USERS

- 1. Authorisation Details - Transport of Radioactive Material.docx
- 2. Co-operation between Employers, Licensees and Registrars.docx
- 3. Radiation Protection Programme.docx
- 4. Management Structure.docx
- 5. Staff Selection, Information and Training.docx
- 6. Control of Radioactive Material.docx
- 7. Control of Radioactive Sealed Sources.docx
- 8. Radiation Protection Measures.docx
- 9. Workplace Monitoring Programme.docx
- 10. Individual Monitoring Programme.docx
- 11. Intervention in Emergencies.docx
- 12. Health Surveillance.docx
- 13. Quality Assurance.docx



# The Self-Assessment Cycle



*“Self-assessment - a routine and continuing process conducted by senior management and management at other levels to evaluate the effectiveness of performance in all areas of their responsibility”*



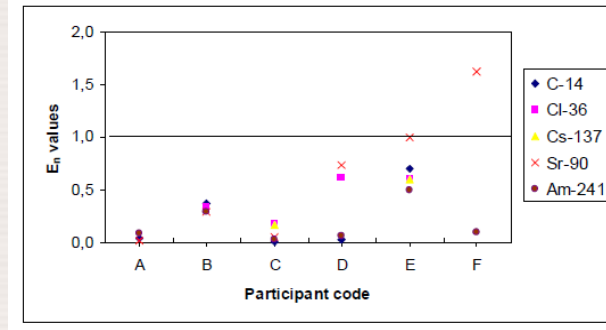
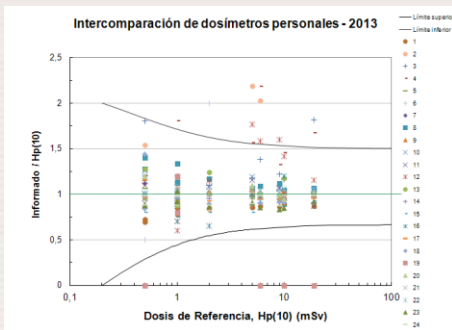
# Summary of Main Findings

## RASIMS & ORPAS

### Service Providers

- Individual monitoring services done by several institutions.
- Financial considerations are limiting the full coverage of the workers
- No clear legal requirements for approval of technical services.
- Monitoring of external exposure limited for the whole body. No extremity monitoring is performed. Neutron monitoring is very limited.
- Conditions during the calibration comply with the relevant standards, ISO 4037-1, -2 and -3. Limited facilities.
- Facilities for monitoring of internal exposure very limited.
- Lack of Quality Management System.

# Intercomparisons for individual and workplace monitoring services

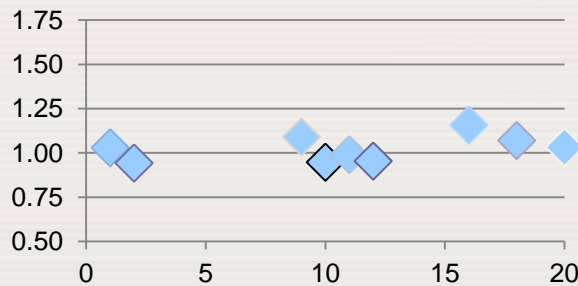


Performance de los Equipos Participantes



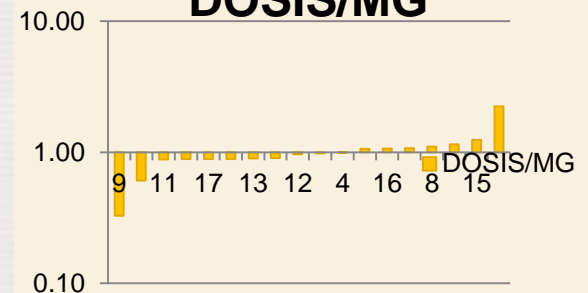
R (Rep/Ref)

Thyroid measurement



Intake and dose calculations

DOSIS/MG



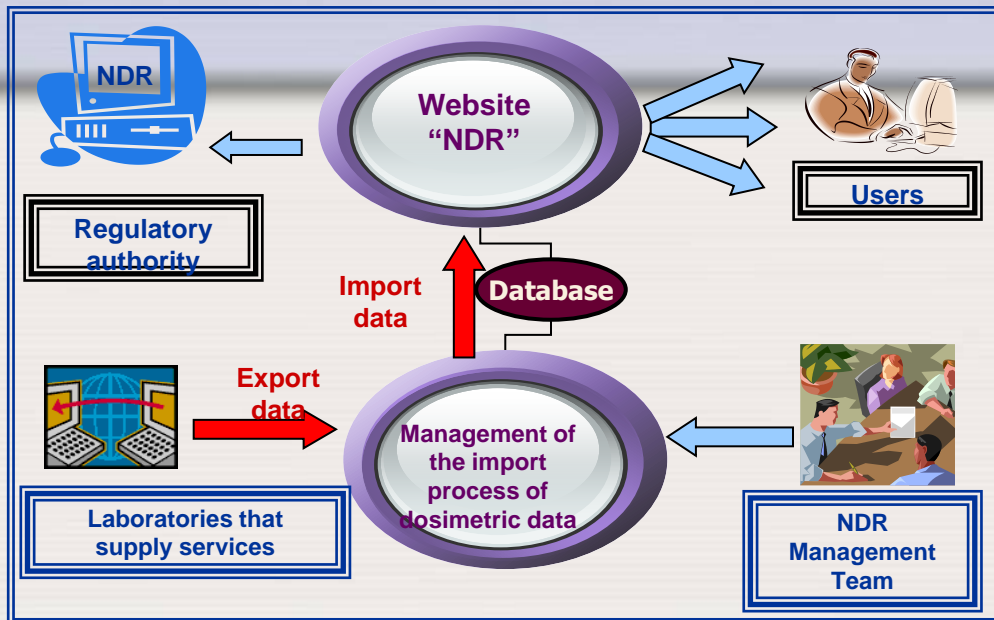
# Summary of Main Findings

## RASIMS & ORPAS

### End-users

- Lack of appropriate and documented Radiation Protection Programme.
- Financial considerations are limiting the full coverage of the workers monitoring as well as limited workplace monitoring programme .
- Limited health surveillance programmes.
- Lack of optimization processes .
- Lack of Quality Management System.
- Lack of Radiation Protection Training programme. Aging of staff.
- Lack of Safety Culture applied to activities and facilities.
- Lack of proper Dose Registry at the facilities and at national level.

# Prototype of a National Dose Registry-LA

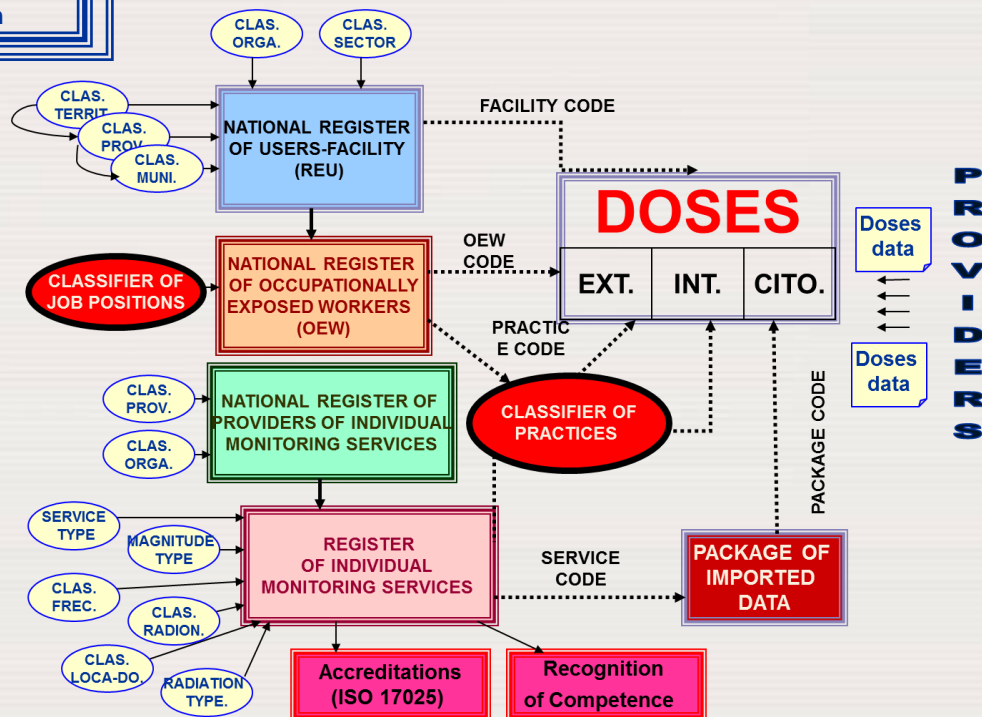


**EUROPEAN UNION CONTRIBUTION AGREEMENT  
WITH AN INTERNATIONAL ORGANISATION**

2011/268-525  
(the "Agreement")

The European Union, represented by the European Commission, (the "Contracting Authority")  
of the one part,  
and  
the International Atomic Energy Agency (IAEA) with its Head office at Vienna International Centre,  
P. O. Box 100, A-1400 Vienna, Austria, (the "Organisation")  
of the other part,  
(Individually a "Party" and collectively the "Parties"), have agreed as follows:

**STRENGTHENING THE TRANSFER OF EXPERIENCE IN SAFETY CULTURE RELATED TO OCCUPATIONAL RADIATION PROTECTION OF THE NUCLEAR INDUSTRY AND OTHER APPLICATIONS INVOLVING IONIZING RADIATION INCLUDING MEDICAL EXPOSURE.**



# Improvement Possibilities

To **continue supporting** the IAEA technical cooperation programme as key element for implementation of the radiation safety standards.

To promote the use of ORPAS for all Member States with the IRRS service already performed and thus with focus on the **End-user and Technical Support Organization**. To consider combining ORPAS methodology with the ILO process for verification ILO Convention 115.

To **continue promoting** self-assessment tools as **SARIS** covering all operational aspects of radiation safety for end-users and TSO.

To **continue promoting networking** on optimization of protection as well as action on **safety culture** in organization, facilities and activities in radiation safety.



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**THANK YOU**



# Additional Information not to be presented

# ORPAS Summary

2000 - First Working Material

2001 - Mission to Slovenia

2002 - Action 2 in ORP Action Plan

2004 - Mission to China & Pre-mission to Turkey

2007- 2008 - Revision of the Questionnaires and Self-assessment tool

2007 - Mission to Chile

2009 - Follow up mission to Chile

2010 - Mission to Uruguay

2010-2012 - Revision of the Questionnaires and Self-assessment tool

2014 - Missions to Peru, Tanzania, Venezuela

2015 – Missions to Ecuador and UAE.

# Action Plan for Occupational Radiation Protection (2002)

## *Action 2: ILO Convention 115*

ILO to consider whether there is a need to review the procedures for requesting from Member States information on the implementation of ILO Convention 115 and to review the types of information being requested, so that peer reviews of occupational radiation protection programmes become more effective.

# Action Plan for Occupational Radiation Protection

## *Desired outcomes- Action 2*

Strengthened ability of ILO, the IAEA and particular stakeholders such as regulators, employers, workers and radiation protection professionals to highlight areas where further action might appropriately be taken to strengthen occupational radiation protection, particularly in developing countries.

Strengthened capacity in Member States to demonstrate that their occupational radiation protection programmes are ensuring the required standards of protection.

More widespread good practices following peer reviews.