



Overview of Radiation Monitoring Laboratory Capabilities in Tunisia

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- COMMENTS & CONCLUSIONS

TUNISIA RADIATION PROTECTION SYSTEM : Introduction

- Tunisia : 10 Million inhabitants
- **No NPP or RR**
- **All the sources are imported**



Existing Practices

- **Medical uses:** 6 Linacs; 10 Cobalt sources used in radiotherapy; 6 brachytherapy facilities; 12 nuclear medicine facilities, 15 RIA facilities; and over 1000 X-ray units, including CT, mammography and interventional radiology.
- **Industrial research and education uses:** 2linacs, Hundreds of sources used for industrial radiography; over 500 sources used in gauges; 2 gamma irradiators; and various low activity sources .

A HAMMOU CNRP MARS 2012

TUNISIA RADIATION PROTECTION SYSTEM : Introduction

New Projects

- 5 Linac, Cyclotron, PET CT
- Research Reactor
- NPP (2020-2025)
- Uranium recuperation from phosphates facility
- RAWM facility

TUNISIA RADIATION PROTECTION SYSTEM :

Introduction

- The peaceful application of NE are multiple in our country, all activities are requiring detection and measurements of Ionizing Radiations :
- Professional , medical and environmental exposure
- In programmed as well as in emergency or existing situations
- For the safety of these sources and activities a regulatory framework is in place since the 1980 in revision and update actually
- New CNRP local with extension of laboratories and creation of new labs (biologic dosimetry anthropogammametry ...)

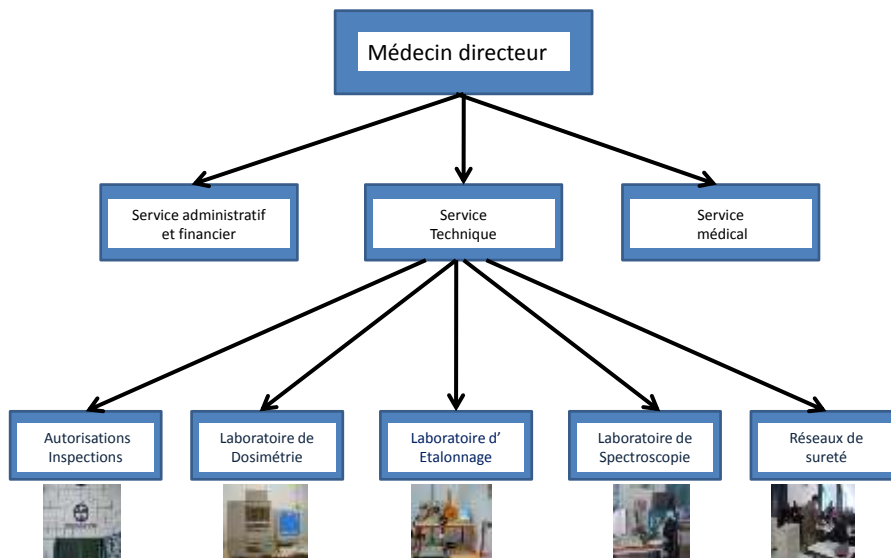
TUNISIA RADIATION PROTECTION SYSTEM – CNRP

- CNRP (Centre National of Radiation Protection) created by Law 81-100 of 31st December 1981 playing the role of regulatory body
 - regulates any use import export of RS and X Ray medical devices
 - Authorizations of sources and practices
 - Inspections of authorized facilities
 - Control of Radiation Protection of workers, public, patients and environment
 - Training and information
 - National and international cooperation
 - Inventory of Radioactive Sources during and after use

TUNISIA RADIATION PROTECTION SYSTEM : CNRP ACTIVITES

- Authorizations, inspections, control
- **Dosimetry, spectrometry, calibration**
- **Network of radiation monitoring**
- National Inventory of SR: RAIS
- Medical consultation
- Control of Radioactive Waste Management
- Training of users , Documentation,
- National and International Cooperation
- Research
- Update of regulations

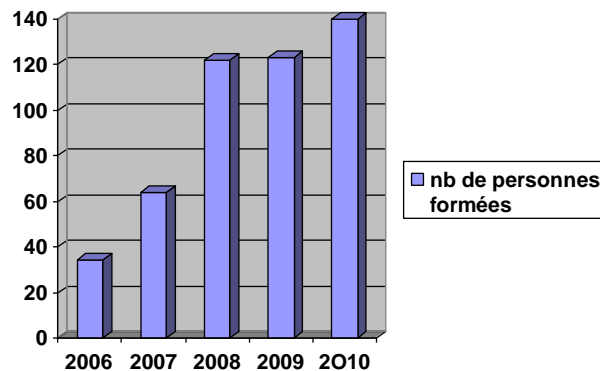
CNRP ORGANISATION



TUNISIA RADIATION PROTECTION SYSTEM : National Plan of radiological and Nuclear Emergency Preparedness and response

- First "Draft" prepared by CNRP and MOH
- Commission meetings: CNRP, MOH , PC, CNSTN
- "Eprev Mission" with IAEA RAF/9/034 and RAF/9/040:
- To be updated and completed within the new regulatory framework projects (CNEA)
- Training courses and exercises 2006, 2007, 2008, 2009, 2010, and 2011,
- CONVEX participation

TRAINING IN RADIOPROTECTION



Monitoring of the Agro Alimentary Chain

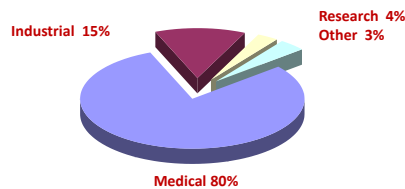
- Export/Import : food, agricultural products
- Spectroscopy labs
- Qualitative routine analysis provided by CNRP spectro lab
Quantitative analysis γ and α , β provided by CNSTN

Mobile laboratory

- A mobile laboratory in the frame of IAEA, CNSTN and CNRP
- allows to measure radionuclide in precipitation or other environmental samples : example of the marine fauna after site rehabilitation

Dosimetry Laboratory

- Radiological monitoring is performed for about 4000 worker
- In different areas Medical, Industrial, Agriculture, Education and Research
- Films were used
- TLD Dosimeters are generalized since 2009
- Intercomparaison tests are performed (IAEA network)



SSDL Laboratory

- The use of measuring instruments and detection of ionizing radiation requires the reliability and accuracy of their responses. In this context, CNRP is in charge to ensure the reliability of measurements in radiation protection and traceability of detectors response through their calibration with X-rays and gamma rays reference.

Network IAEA / WHO laboratory secondary standard dosimetry SSDL

Tunisia is a member of this Network of Secondary Standard Laboratory Calibration and Dosimetry: SSDL since 1995
We regularly participate in quality comparison tests
The SSDL has facilities for calibrating all types of radiometers and TLD dosimeters



Salle d'irradiation du laboratoire d'étalonnage



Salle de contrôle et de commande du laboratoire d'étalonnage



Electromètre de référence "Dosimètre Farmer"



Tube à RX + Source de Césium 137



Salle d'irradiation du lab. d'étalonnage abritant un tube à RX et un irradiateur de rayons γ



Chaîne de mesure de référence (chambre d'ionisation 600 cc connectée à l'électromètre)

CONCLUSION

- **Concerns:** consistent phone line connection, travel for remote on-site maintenance, and equipment upgrade.
- To meet international standard requirements Tunisia should upgrade its regulatory framework
- Upgrade monitoring capacities
- Reinforce cooperation and **networking**
- Accreditation of laboratories
- Develop Regulation and quality control procedures and maintenance program
- Specific immediate challenges are the finalization of the new laboratories extent project with equipment upgrade.