



# THE ARAB NETWORK FOR NUCLEAR REGULATORS (ANNuR)

Abdelmajid Mahjoub  
DG

*The Arab Atomic Energy Agency*

Tunis, TUNISIA  
[aaea@aaea.org.tn](mailto:aaea@aaea.org.tn)

# Nuclear activities in Arab countries

- Arab countries are at different stages of development and capabilities, in general;

## Activities:

- Use, import, produce and export, sources of ionizing radiation for industrial, research, agriculture and medical applications.

# Nuclear Facilities in Arab Countries

## Facilities:

- Equipments for radiotherapy & nuclear medicine,
- Ion and electron beam accelerators for fundamental research, elemental analysis, radioisotope production,.....applications,
- Gamma irradiators, neutron sources,
- radioactive waste management facilities (storage and disposal),
- research reactors.



Many Arab Countries show interest in embarking on  
nuclear power program

# Research Reactors in Arab Countries

Ref. IAEA Research Reactor Database, <http://nucleus.iaea.org/RRDB/>.

Country	Facility Name	Thermal Power (kW)	Type	Status	Criticality Date
Algeria	<a href="#">ES-SALAM</a>	15,000.00	HEAVY WATER	OPER	1992/02/17
Algeria	<a href="#">NUR</a>	1,000.00	POOL	OPER	1989/03/24
Egypt	<a href="#">ETRR-1</a>	2,000.00	TANK WWR	OPER	1961/02/08
Egypt	<a href="#">ETRR-2</a>	22,000.00	POOL	OPER	1997/11/27
Iraq	<a href="#">IRT-5000</a>	5,000.00	POOL, IRT	SHUT	1967/01/01
Iraq	<a href="#">TAMMUZ-2</a>	500.00	POOL	SHUT	1987/03/01
Jordan	<a href="#">JRTR</a>	5,000.00	TANK IN POOL	PLAN	
Jordan	<a href="#">JSA</a>	0.00	SUBCRIT	CONS	
Libya	<a href="#">IRT-1</a>	10,000.00	POOL, IRT	OPER	1981/08/28
Libya	<a href="#">Tajura</a> Critical Stand	0.00	CRIT	OPER	1981/08/28
Morocco	<a href="#">MA-R1</a>	2,000.00	TRIGA MARK II	OPER	2007/05/02
Syrian Arab Republic	<a href="#">SRR-1</a>	30.00	MNSR	OPER	1996/03/04

# THE NEEDS

Most Arab countries have currently limited nuclear activities and capabilities and there is a clear need for:

- Development of the infrastructures and capabilities for the legislative and regulatory framework, nuclear safety, nuclear security, emergency preparedness and response and radioactive waste management activities.
- National infrastructure and capacity building at an institutional, organizational and technical levels to initiate and sustain a safe and secure utilization of nuclear technology and power programmes.
- Human resources development especially in nuclear safety and security.
- Sharing knowledge, best practices and lessons learned related to S&S matters

The aim of ANNuR is to address these needs

- Nuclear safety and radiation protection are the prime responsibility of the operators / licensees.



- The role of regulators is to ensure that this responsibility is fully secured, in compliance with the regulatory requirements

# Need for national RB

ACs need to establish, develop and sustain a national regulatory bodies in relation to nuclear safety, and security framework based on the international instruments and the IAEA Nuclear Safety & Security Standards and Guidelines.

***The RB has to be:***

***Independent, Transparent , Efficient,  
Reliable, Robust, Competent***

# Multinational Networks Among Regulators

**Purpose:** share common experiences and advice among regulators facing similar problems.

## Examples:

- International Nuclear Regulators Association (INRA)
- Western European Nuclear Regulators Association ( WENRA)
- Network of Regulators of Countries with Small Nuclear Programmes (NERS)
- Asian Nuclear Safety Network (ANSN)
- Global Nuclear Safety and Security Network (GNSSN) developed by IAEA to provide linkages to existing networks
- Forum of Nuclear Regulatory Bodies in Africa ( FNRBA)
- Arab Network of Nuclear Regulators (ANNuR), March 2010



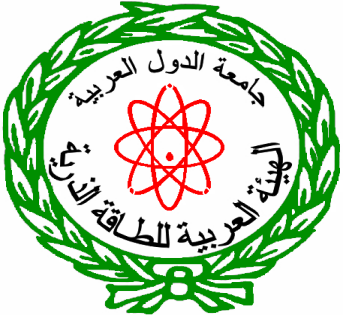
# Networks Objective

- ➡ To ensure that safety and security knowledge, experience, and lessons learned are made visible and available, through links between platforms, and exchanged broadly,
- ➡ To enable and support interaction and collaboration between competent people and organizations.

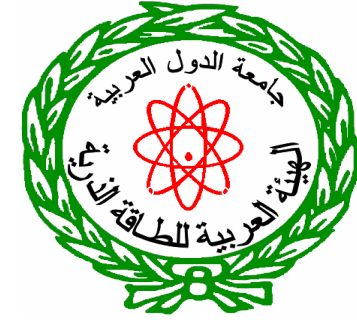
# ANNuR establishment

## The Objectives of ANNuR are:

- To enhance, strengthen and harmonize the regulatory infrastructure among ACs;
- To provide mechanisms for ANNuR to be an effective and efficient internationally recognized network for exchange of regulatory experiences and practices among the nuclear regulatory bodies in Arab states.
- To Interact positively with other international & regional networks as well as GNSSR



# ANNuR MEMBER STATES



22 member states in LAS

## African Countries

Egypt  
Libya  
Sudan  
Tunisia  
Mauritania  
Morocco  
Algeria  
Comoros  
Djibouti  
Somalia



## Gulf Countries

Bahrain  
KSA  
Kuwait  
Oman  
Qatar  
UAE

## Asian Arab Countries

Iraq, Jordan, Lebanon,  
Palestine, Syria, Yemen,

# Objectives of the ANNuR

Pooling, analyzing and sharing existing and new knowledge and information on NSS

Facilitate the cooperation between Arab, regional and Int. nuclear bodies

Creation of human network and cyber community

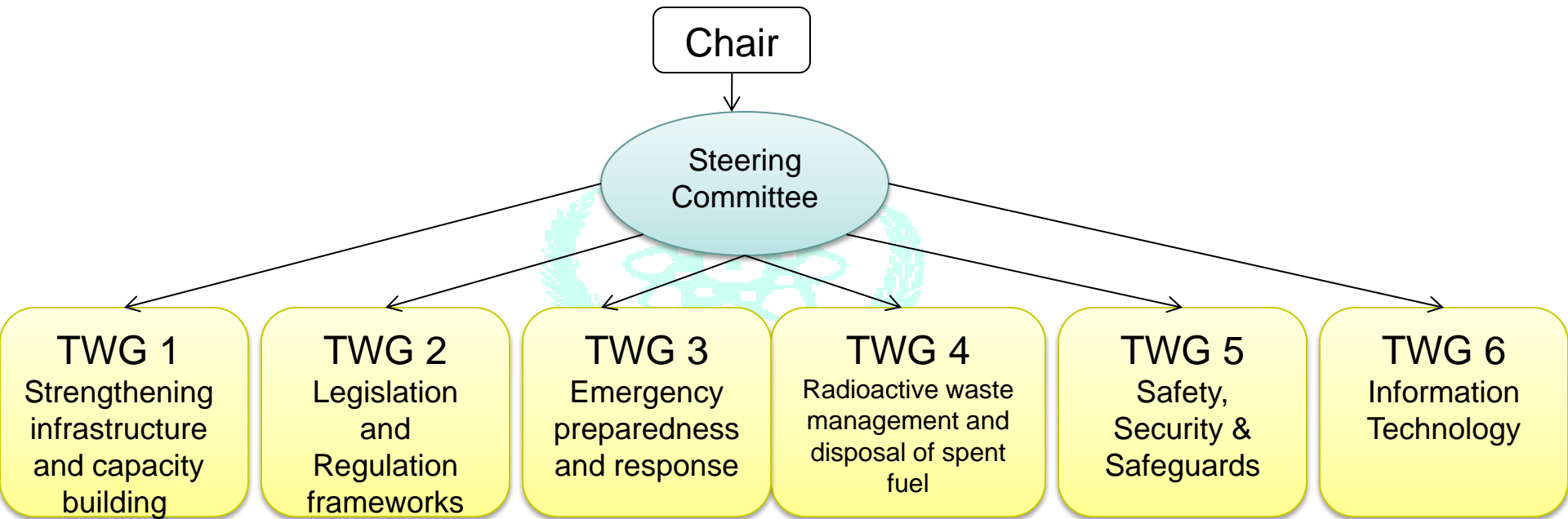
Capacity building system to share knowledge and experience between regulators in Arab countries

Enhancement of nuclear safety infrastructures in Arab countries

Assuring and upgrading safety of nuclear installations in ACs

Provide regulatory insights to nuclear safety issues specific to ACs

# ANNuR Plenary and Country Representatives



# The Thematic Working Groups

Thematic Working Group	coordinator
strengthening infrastructure and capacity building for regulatory bodies	Jordan
Legislation and Regulation frameworks	Tunisia
Emergency preparedness and response	Iraq
Radioactive waste management and disposal	Libya
Safety, Security and Safeguards	Egypt
Information Technology	IAEA/AAEA

- Chairmanship → Jordan 2011 -2013 , 2013-2015 → Tunisia
- Steering Committee → Morocco, Egypt, Iraq and Lebanon



*- “The Agency has supported The Forum of Nuclear Regulatory Bodies in Africa and also supported the Arab Knowledge network ‘ANNuR’ created early this year. ”*

*Speech of Yukia Amano, IAEA DG, in Madrid , the 30th anniversary of establishing CNS ,June 2010*

*- DG visited AAEA headquarter in Tunis June 2012*

*- IAEA assists in establishing ANNuR and send experts to participate in different AAEA activities*

*- IAEA and AAEA jointly organising many training activities e.g:*

- Workshop on Self-Assessment Tool for the SSG-16
- Regional Workshop on Nuclear Power Plant Project Management
- Regional Workshop on Collaboration on Radioactive Waste Management in the Arab Countries
- Training Course on IAEA Tools and Methodology on Energy Planning
- Regional Workshop on the SharePoint Application for Arab and African Regulatory Networks



KINS is *supporting many ANNuR and AAEA activities.*

- *MOU has been signed between KINS and AAEA*
- *Co- sponsoring ANNuR*
- *MsC grants in ISNS for ANNuR member states.*
- *A training course for Arab professionals about Fundamentals of Nuclear Power Plants and safety regulation was organised October 2011, Daejeon*
- *Workshop on legislation and regulation of nuclear facilities, Hammamet, May 2012*
- *A workshop on nuclear and radiation emergency: preparedness and response held in September 2012 in KINS radiation and nuclear emergency centre in Daejeon*
- *Workshop on Inspection and Licensing. Amman, September 2013*
- *A training course for Arab professionals about Fundamentals of Nuclear Power Plants and safety regulation, October 2013, Daejeon .*





➤ **US-NRC supported 4 training programmes in the field Nuclear and Radiological Regulation:**

- **Nuclear Executive Workshop for Decision Makers in Regulation of Nuclear Power Programs**
- **Workshop on the Physical Protection of Radioactive Sources**
- **Site Application Review**
- **Workshop on Physical Protection of Nuclear Materials and Installations**
- **Radiological and Nuclear Emergencies**
- **Regulatory Aspect of Power and Research reactors siting**

**US-NRC is expected to support three more activities in 2014**



- **EU representatives are attending all ANNuR meetings**
- **EU supported a training course on Legal & Regulatory Frameworks and Basic Safety Requirements for NPP in Hammamet-Tunisia, 2013**



➤ **AAEA has an agreement with DoE, LLNL to support 3 activities annually in the field of Nuclear Safety, Security and Safeguards**

- Regional Workshop on Nuclear Power Plant Project Management
- Training Course on Basic Requirements of Nuclear Regulatory Bodies
- Regional Seminar on Radiation Protection, Nuclear Safety and Nuclear Security
- The Regional Workshop on Nuclear Security and Safeguards
- Workshop on Regulation, Legislation and Security of Radioactive Sources
- Workshop on Radiation Monitoring and Export Control

# The Thematic Working Groups

Thematic Working Group	coordinator	ANNuR 4 <sup>th</sup> meeting Action Plan March 2013
strengthening infrastructure and capacity building for regulatory bodies	Jordan	
Legislation and Regulation frameworks	Tunisia	
Emergency preparedness and response	Iraq	
Radioactive waste management and disposal	Libya	
Safety, Security and Safeguards	Egypt	
Information Technology	AAEA/IAEA	

- All participants were given access to GNSSN and presentations of the meeting put in the website.



## Libraries

2nd ANNuR meeting,  
Tunisia, 4 -7 May 2011

## Human Network

ANNuR Steering  
Committee

## IT Network

Information Technology  
National Regulatory  
Protal

## Working Groups

Strengthening  
Infrastructure and  
Capacity Building for  
Regulatory Bodies

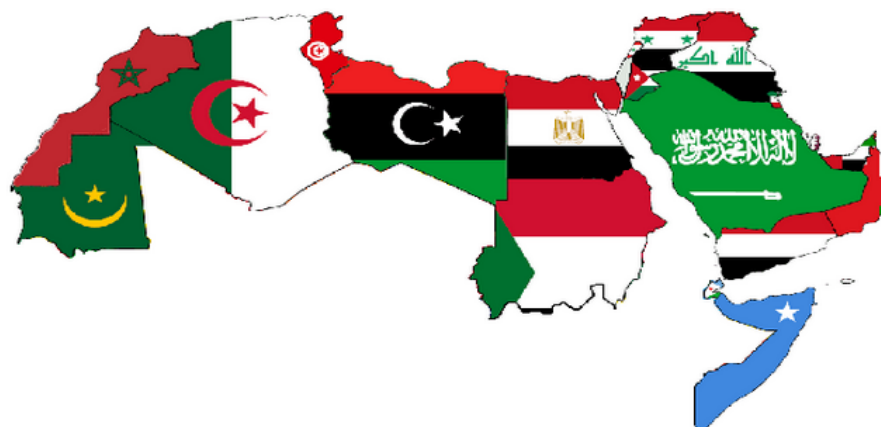
Legislation and  
Regulation Frameworks

Emergency  
Preparedness and  
Response

Radioactive Waste  
Management and  
Disposal of Spent Fuel

## Documents

2nd ANNuR Meeting 04-  
06 May Tunis



### Arab Atomic Energy Agency (AAEA) Member States

*Bahrain, Egypt, Iraq, Jordan, KSA, Kuwait, Lebanon, Libya, Palestine, Sudan, Syria, Tunisia, Yemen*

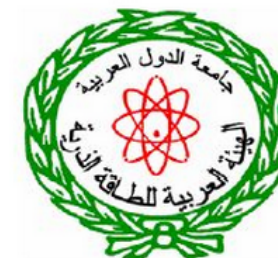
### ANNuR Member States

Along with all AAEA Member States these countries are members of ANNuR:  
*Algeria, Comoros, Djibuti, Mauritania, Morocco, Oman, Qatar, Somalia, UAE*

### The mission of ANNuR is:

- To enhance, strengthen and harmonize the regulatory infrastructure among the Arab countries
- To provide mechanisms for ANNuR to be an effective and efficient, internationally recognized network for exchange of regulatory experiences and practices among the nuclear regulatory bodies in Arab states
- To interact positively with other international and regional networks as well as GNSSF

[\[Arabic\]](#) [\[French\]](#)



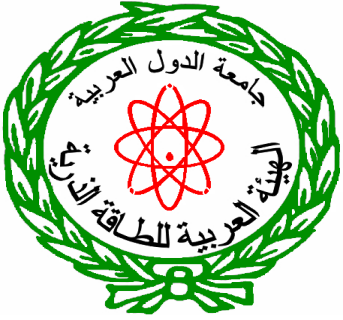
## Links

- ▣ [ANNuR Member Countries](#)
- ▣ [ANNuR Partner Organizations](#)
- ▣ [Other Related Links](#)

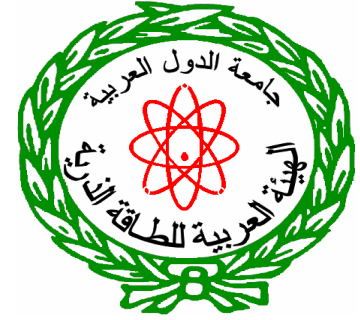
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# Action Plan of 2014-2015

		TWG 1	A3	Regional Workshop on self assessment of NPP projects	UAE	XYZ	03-04-2014
		TWG1		CS on the integreted CB Plan-document	Vienna		2Q
		TWG1		Seminar on CB selfassessment and knowledge management(HRD,QM,GSR1)	Jordan		1Q
		TWG1		CS on the integreted CB Plan-document	Tunis		3Q
		TWG1		Developement of a national report on capacity biilding activities (Jordan)			2Q 2015
		TWG1		Nuclear safety Management for young professionals			2Q
		TWG3		workshop EPR fundamentals		IEC	2Q
		TWG3		complete the TWG membership-NCA		IEC-IAEA	1Q
		TWG3		workshop update and review selfassessments			3Q
				update inventory			
		TWG3		workshop on conducting threat (hasard) assessment			Q4
		TWG2		Workshop on the development of legal, govern.....	Tunis		Q2
		TWG2/TWG5		Regional WS on regulatory framework for nuclear facilities (Safety/Security)	Jordan		Q3
		TWG6		Regional NNRP workshop	Jordan		Q2/Q3
		TWG5		workshop -DBT for regulators	Jordan		Q3/Q4
		TWG5		workshop on Nuclear Security culture	Tunis		Q2/Q3
		TWG5		workshop on inspection for RR for regulators	Egypt		Q4



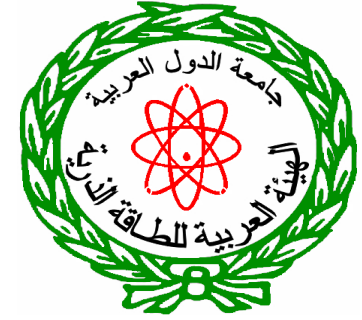
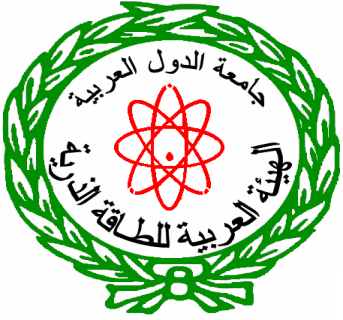
## **Building of a Mobile Hot Cell for the management of disused sealed radioactive sources in the Arab Countries.**



The use of sealed radioactive sources (SRS) applications in Medicine, Agriculture, Industry and mineral exploration have extensively increased in the last decades. Unfortunately, the management of spent and disused sources has not been well established.

To establish a mobile hot cell to solve problems associated with spent sources in the Arab countries

Initial negotiations with the IAEA showed their willingness to train a team from the Arab countries and help in the design and manufacture of the unit. The mobile hot cell will be an important asset for the Arab countries to strengthen safety and security and safeguards of the radioactive sources in the region and the world.



**Thank you**