



AAEA Role in promoting Nuclear and Radiation Activities in Arab Countries

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Arab Atomic Energy Agency

Tunis



The AAEA

- ➡ It is a sub organization of The Arab league.
- ➡ 13 Arab states are members of AAEA
- ➡ The structure of AAEA is similar to that of IAEA and shares the same principles and objectives.





13 member states

African Countries :

Egypt
Libya
Sudan
Tunisia
Algeria
Comoros
Djibouti
Mauritania
Morocco
Somalia



Gulf Countries:

Bahrain
KSA
Kuwait
Oman
Qatar
UAE

Asian Arab Countries :

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

The objectives of AAEA

- To coordinate activities in the field of peaceful applications of atomic energy.
- To implement coordinated research projects between Arab states in different fields of atomic energy applications; such as agriculture, industry, medicine, environment and nuclear power
- To assist in human resources development
- To contribute in knowledge and technology transfer
- To assist in setting up regulations for radiation protection, nuclear safety and security and safe handling of radioactive materials.

Activities

- Carrying out training courses, co-ordinated research projects, experts meetings, scientific visits, on-job training, workshops, conferences, seminars and expert missions.
- Assistance for the introduction of nuclear sciences and technologies in the educational curricula in universities and colleges
- Publication and translation of books in different fields of nuclear sciences
- Publication of a quarterly journal

AAEA Activities related to Radiation Protection and Safety

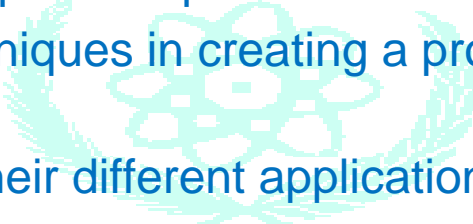
- RP in nuclear medicine and radiotherapy centers
- RP to the workers in regulatory authorities
- Safety and security of radioactive sources
- Modeling of nuclear accidents and their effects in the environment and public health
- Medical preparedness for radiation accidents and recycling the radioactive wastes
- Radiation monitoring & early warning networks and emergency plans
- Safety of reactors
- Study of radioactive and chemical pollution

AAEA Activities in Radiation Protection and Safety

- AAEA translate many IAEA guides and technical documents related to radiation protection to Arabic like:
 - Safety series, International Basic Safety standards for protection from Ionizing radiation and safety of radioactive sources BSS
 - Assessment of occupational exposure (Safety guide)
 - Occupational radiation protection
 - Technical document of radioactive waste disposal
 - Decommissioning of research reactors and NPP

AAEA spreads the safety and radiation protection culture among Arab speaking nuclear community

Other fields of activities

- Optimal utilization of research reactors
 - Isotope hydrology for water resources management
 - Use of stable and radioactive isotopes in hydrology and water resources management
 - Use of radioactive isotopes in the assessment of residual pesticides and insecticides in plant crops
 - Use of nuclear techniques in creating a productive and high quality agricultural species
 - Accelerators and their different applications
 - Use of nuclear techniques in elemental analysis
 - Food irradiation and methods of detecting irradiated food
 - Radioactive treatments for polymers for industrial and medical use
 - Non- destructive testing in the industry
 - Agriculture and industrial applications
- 

Co-ordinated Research Projects

CRP is a project put by experts in a certain field according to the needs of sustainable development in the Arab countries and to the human resources and technologies available, below list of ongoing CRPs

- Study of chemical and isotopic characteristics of rain water
- Determination of the sources of surface, ground and shallow water pollution using hydro chemical and isotopic methods
- Using mutation technology and tissue culture in producing improved agricultural crops that resist drought and salinity
- Fruit flies eradication using sterilized insects technology
- Preparing standard reference material
- Food safety and developing tools of detecting irradiated food
- Using sewage water in irrigation

Nuclear activities and facilities 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.

Facilities:

- Have nuclear and irradiation facilities for medical, industrial, research, agriculture,...purposes:
 - 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



Research Reactors in ACs

- **Egypt:** has a 1961-vintage 2 MW Russian research reactor, and a 22 MW Argentinean research reactor, started up in 1997.
- **Algeria** :operated two research reactors, at Draria (1 MW) and Ain Ouessara (15 MW). A 1 MW was built by Argentina, the other by China.
- **Libya:** has a Russian 10 MW research reactor
- **Morocco:** has a 2 MW Triga research reactor under construction at Mamoura .
- **Syria:** has a 30 Kw MNSR (Miniature neutron source reactor)



- Recently AAEA developed with member states “The Arab Strategy for Peaceful use of Atomic Energy up to 2020” Approved by the Arab summit.
- A ten year programme up to 2020 has been developed by Arab experts touching all fields of nuclear applications including nuclear power
- AAEA is ready to assist Arab states to develop their nuclear infrastructure and act as coordinator between member states to foster exchange of experiences



Recently many Arab countries have expressed their interest in adopting nuclear energy for electricity generation and sea water desalination and sought assistance from IAEA



Key drivers of ACs interest in nuclear power

- Growing energy demand – to double by 2030
- Domestic security-of-supply concerns
- Volatility of fossil fuel prices and low operational costs of NPP
- Global climate change
- Nuclear industry's increasing experience and improved safety record
- Ability to apply nuclear power to desalination
- Desire to sell hydrocarbons profitably in international markets

CAPABILITIES & NEEDS

- Most Arab countries have currently limited nuclear activities and capabilities
- There is a clear need for 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.
- Need for human resources development especially nuclear safety, security and radiation protection.
- Need to develop the infrastructures and capabilities for the legislative and regulatory framework, nuclear safety, nuclear security, emergency preparedness and response and radioactive waste management activities.

RIGHTS AND OBLIGATIONS

Arab states have the right to acquire nuclear technologies for peaceful utilisation for socio economic development , but it is their responsibility to do it **right**

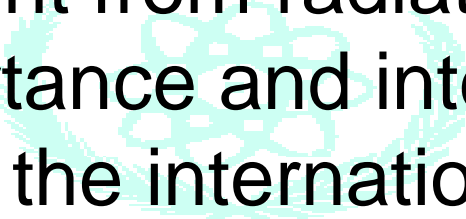


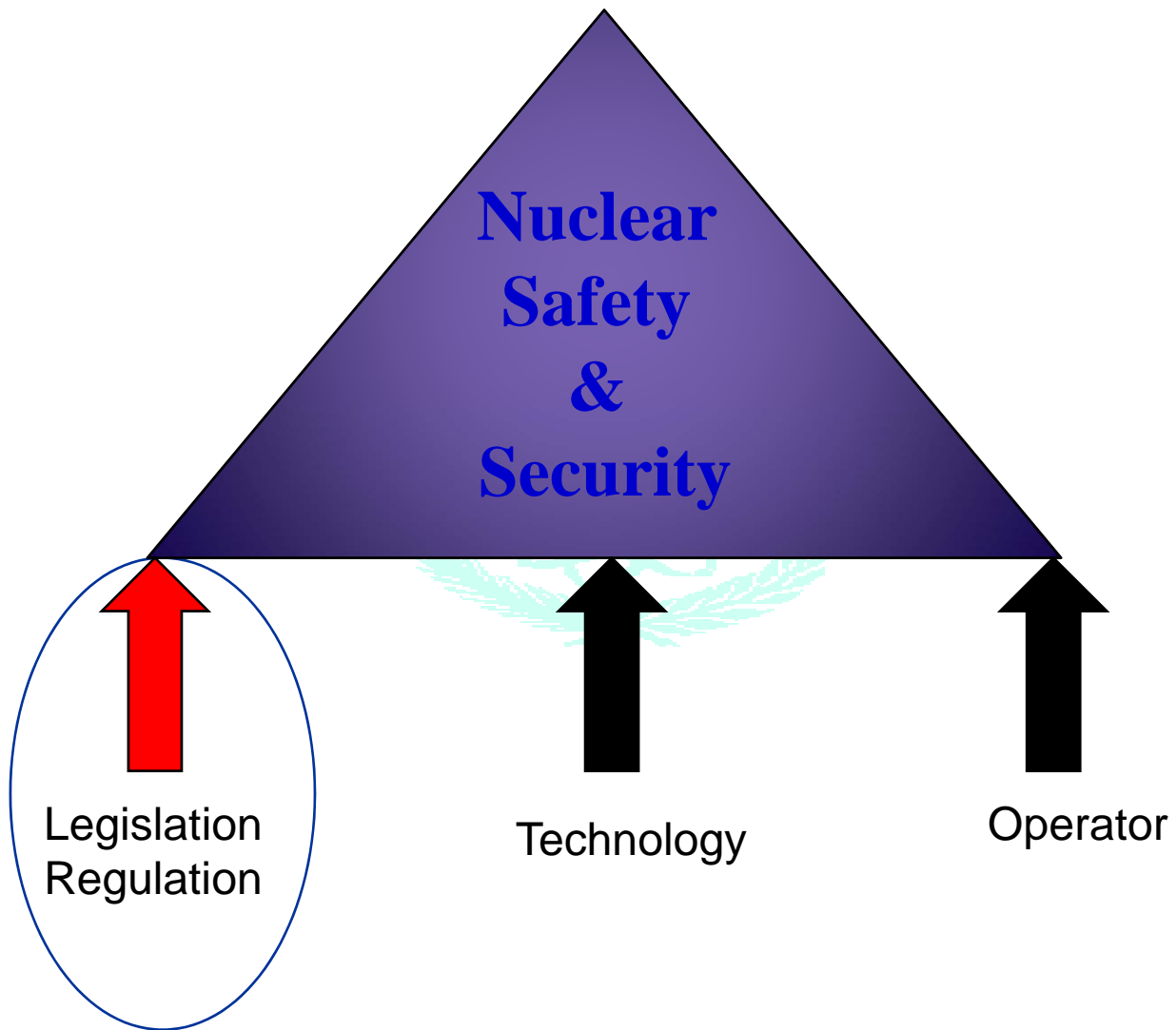
AAEA Role to assist in:

- 👉 Human resources development
- 👉 Establishing a legislative and regulatory bodies
- 👉 Develop their nuclear infrastructure and act as coordinator between member states to foster exchange of experiences
- 👉 Safety, Security, Radiation protection

SAFETY AND SECURITY

The nuclear safety and security measures that need to be taken to protect workers, public and environment from radiation hazards are of utmost importance and interest to the Arab countries and the international community





Globalization of S&S

- Nuclear safety & security are a global issue.
- “Accident anywhere is accident everywhere”
- There are many instruments for achieving high level of nuclear safety on a global basis, such as nuclear-safety-related conventions, IAEA safety standards and guides, safety review services provided by the IAEA.
- AAEA facilitate enrollment of Arab country in the International Nuclear Safety and Security Regime