National Radiation Protection Program of King Abdullah City for Atomic and Renewable Energy (K.A.CARE)

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Outline

❖ Introduction

❖ NCRP Organizational Structure

❖ NCRP Main Functions

❖ Regulations

❖ Work Plan for the Future
Introduction

- 1985, Regulatory activities started by KACST
- 2008, National Center for Radiation Protection (NCRP), KACST was established
- 2010, KACARE was established
- 2013, NCRP activities were transferred to KACARE
- KACARE is the regulatory authority
Outline

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NCRP Organizational Structure

Director

Secretary

Qualification Department (3)

Regulations & Control Department (4)

Import/Export permits Department (4)

Licensing Department (5)
NCRP Organizational Structure

Overall Man Power:

1. Ph.D. = 1
2. M.Sc. = 3
3. B.Sc. = 13
4. Technical Diploma = 1
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NCRP Main Functions

1. Preparation of regulations and guidance

2. Authorization of practices

3. Authorization of import/export of radioactive sources
NCRP Main Functions

4. Maintaining a national register of radiation sources

5. Authorization of Radiation Safety Officers
NCRP Main Functions

6. Authorization of services

7. Inspections

8. Enforcement
9. Accident reporting and investigation

10. Monitoring of occupational exposures
NCRP Main Functions
Licensed facilities/activities in the KSA

- Nuclear gauges
- Industrial radiography
- Nuclear medicine
- Well logging
- Gamma irradiation
- Transport of radioactive sources
- Research and education
- Diagnostic x-ray practice
- Radiotherapy
- Radioisotope production (cyclotron)
- Containers inspection
- Technical Services (Training, QA, calibration, TLD)

Counts:
- Nuclear gauges: 207
- Industrial radiography: 87
- Nuclear medicine: 98
- Well logging: 16
- Gamma irradiation: 11
- Transport of radioactive sources: 17
- Research and education: 36
- Diagnostic x-ray practice: 4
- Radiotherapy: 14
- Radioisotope production (cyclotron): 3
- Containers inspection: 21
- Technical Services (Training, QA, calibration, TLD): 21

Total: 535
NCRP Main Functions

Licensed facilities/activities in the KSA

• Authorized RSO  2220

• Requests for import/export (10 years)  3000

• Requests/y for new, renew or modify licenses  350
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Regulations

- **Current Regulations (2007)**
  - General Instructions on Protection against Ionizing Radiations in KSA
  - Instructions of Safe Transportation of Radioactive Materials in KSA
  - Instructions on Radioactive wastes Management in KSA

- **Regulations regarding NORM (2008)**
  - Radiation Protection Regulations for Water Purification Plants,
  - National Guidance for Working with NORM in water,
  - Management and Transport of NORM Related Radioactive Wastes
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Work Plan for the Future

K.A.CARE’s Initiatives

1. Infrastructure Self Assessment
2. Site Survey Study
3. Value Chain Studies
4. Human Capacity Building
5. Research & Development
6. Establishing an Independent Regulatory Body
7. Business Model & Investment
8. International Framework
Work Plan for the Future

Regulator Mission

1. Protect the People and the Environment from the potential harmful effects of Ionizing Radiation
2. Prevent and avoid the misuse of Nuclear Energy, Nuclear Materials and Radioactive Materials
3. Meet country obligations with the International Community in the fields of nuclear and radiation safety, security and safeguards
Work Plan for the Future

- Partnership Support Services Agreement
- Technical Partner: STUK
  - Complete Ownership by K.A.CARE.
  - Active project Co-Management with STUK.
  - Proactive hand in hand participation of K.A.CARE-RU in activities.
  - Follows and observes World Best Practices approach and Experience in the Field.

![Diagram showing Saudi Regulator, Contractor Support (TSO, LSO), and Regulatory Partner(s) with arrows indicating Validate/Advice and Train/Mentor relationships.]
The approach to Build the KSA Regulatory Body

- The modular scalable (in size).
- In stages (over time).
- Possible development (depending on future decisions).
- Specially tailored to the need of the Kingdom (not copy / paste from previous trials).
- Participation in the design and implementation of the regulatory body.
- Bridging the transition from the current situation to a situation where the KSA to become a nuclear state.
- Bridging the gaps to meet the immediate needs and obligations of the state.
- Availability of jobs and tasks when you need to develop a program for the establishment of a nuclear power station.
Work Plan for the Future

Regulatory Body – The Building Blocks

Stage 1
- Conceptual design & initial implementation of the Regulator

Stage 2
- Detailed design & fully functional Regulatory body (within K.A.CARE)

2013
- Engage STUK partnership
  - Basic Org. Structure
  - Integration of Existing Activities
- Framework & Fundamental
  - Nuclear law
  - Short Term Strategy
- Initial recruitment of HR
  - LPRR licensing
  - Management System

2014
- Strategic fundamentals
  - Licensing of LPRR
  - Legislation
  - Safety Infrastructure

2015 / 2016
- Safety assessment
  - Radiation safety
  - NPP Licensing
  - Regulations & Guides
  - Safeguards

2018+
- Human Resources
  - Admin. and Support
  - International framework
  - Communication strategy
  - Management System
  - Nuclear Waste
Work Plan for the Future

Nuclear Energy and Radiation Safety Laws

- Nuclear Liability Law
- Statute of the Nuclear Energy regulator
- Nuclear and Radiation Protection Law
Work Plan for the Future

Development of Legislative & Regulatory Framework

KSA Nuclear Related Regulations

Nuclear Safety

Regulations

Reg. # | Title |
---|---|
1 | General regulation 1 |
2 | General regulation 2 |
3 | Siting of Nuclear Facilities |
4 | Design of NPPs |
5 | Safety assessment |
6 | Construction and commissioning |
7 | Operation |
8 | Decommissioning |
9 | Radiation protection and emergency Preparedness |
10 | Nuclear Security |
11 | Nuclear safeguards |
12 | Nuclear waste |
13 | General requirements for radiation protection and safety |
14 | Planned exposure Regulation |
15 | Emergency exposure Regulation |
16 | Existing exposure Regulation |

Radiation Safety

Regulations

Reg. Guides

Each Regulation may include One or more Reg. Guides
Work Plan for the Future

Regulatory Body Interim Organizational Structure
Work Plan for the Future

Radiation Safety Department:

Units:
1. The Radiation Practices Unit.
2. Environmental Monitoring Unit.
3. Emergency Preparedness and Response Unit.
4. Waste safety Unit.

Responsibilities:
1. Development of regulations
2. Review and assessment of radiation safety
3. Licensing of applications for the use of radiation
4. Inspections
5. National and international co-operation
Work Plan for the Future

The Role of Radiation Practices Unit:

Development of Specific and generic requirements regulations and guides

Categorization of regulated practices and sources

Review and assessment of license applications

Comprehensive inspection, review and assessment

Comprehensive record keeping

Personnel qualification, certification, and authorization

Emergency preparedness, exercises & related safety assessment

Inspection program for categorized practices and sources

Authorization of radiation protection related services
Work Plan for the Future

The role of Envi. Monitoring Unit:

- Monitoring public exposure levels of ionizing radiations
- On-line monitoring of ambient dose rate, monitoring of airborne radioactivity
- Monitoring of radioactivity in foodstuffs and water
- Development of environmental monitoring procedures for emergencies
- Means to assess radiation doses to the population in radiological emergency
- Environmental surveillance program in the vicinity of nuclear facilities
- Base-line studies on radioactivity in the sites of nuclear facilities
- Development and maintenance of the laboratories of the Regulator
- Regional monitoring of radioactivity in the marine environment
Work Plan for the Future

The role of the Emergency Preparedness Unit:

- Preparation and implementation of the emergency plan of the regulatory body
- Preparation and maintenance of the alarm arrangements of the regulatory body
- Development and maintenance of the emergency center of the regulatory body
- Training regulator staff to respond to nuclear or radiological emergencies
- Safe recovery and disposal of disused and orphan sources and radioactive materials
- National co-operation in the area of emergency planning and exercises for stakeholders
- Planning and execution of emergency exercises for the staff of the regulatory body
Work Plan for the Future

The role of the Waste Safety Unit:

- Review and assess the national strategy for radioactive waste and spent fuel management
- Develop related regulations and regulatory guides
- Development and maintenance of the emergency center of the regulatory body
- Inspect, review and assess plans for radioactive waste management
- Review and assessment of decommissioning plans
- Inspect, review and assess radioactive waste management during operation of nuclear facilities
Summary

- The National Radiation protection program is evolving
- Regulatory body creation is in cooperation and partnership with STUK
- New laws, regulations and regulatory guides are being developed
Thank You