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1. Background and Goal of the present work

I will be able to know the reflection and compare the procedures required in the implementation manual for the safety of transporting, storing and using radioactive materials under category (A) and the mandatory procedures in the Sudanese regulation for the safety of transport, storage and use of radioactive materials in category (A).

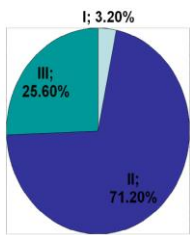
Introduction

The main application of radioactive source in Sudan

- Medical applications:
 - 6 radiotherapy centers (Co-60).
 - 8 Nuclear Medicine centers (Tc-99m, I-131)
- Industrial Applications:
 - Industrial Radiography (Ir-192).
 - Oil exploration: (Cs-137, Am-Be).
 - Nucleonic gauge for soil density and thickness measurement (Cs-137, Am-Be).
 - Continuous level Nuclear gauge in refineries
- Education & Research: agriculture, animal production
 - Neutron Generator
 - Research (Irradiator (Co-60),

- point sources, This application needs to be under control, Sudanese government put in place

Distribution of Sealed Radioactive Sources Per Category

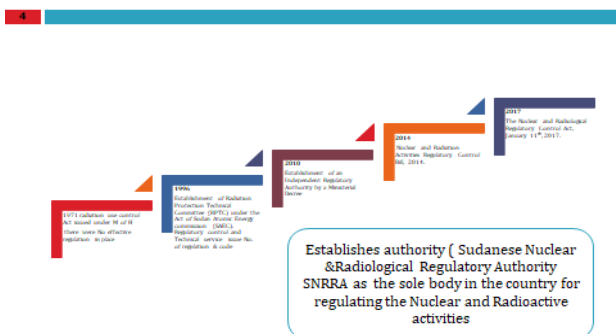


This application needs to have in place under control

2. Evaluation of nuclear and radiological act

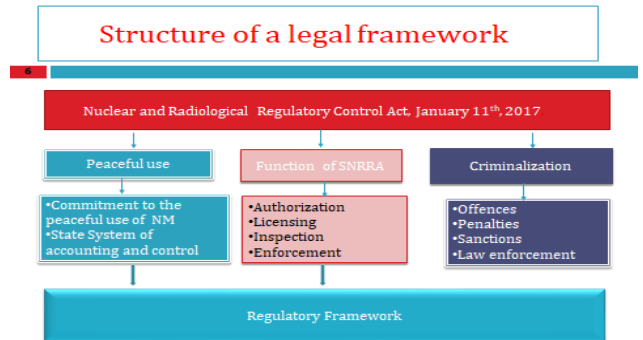
- Nuclear law 2017 Designate Sudanese nuclear and radiological regulatory authority (SNRRA) as single independence authority responsible for safety, security and safeguards.
- Repeal both acts (under ministry of health and Sudan atomic energy commission)
- Sudanese government secure fund for Sudanese nuclear and Radiological Regulatory Authority SNRRA to conducted main function relate authorization, licensing, Inspection and enforcement

Evolution of Nuclear & Radiological Act



3. Structure of alegal framework

- Sudan has two regulation one of them is related to security of radioactive matrial during use ,storge and transport adress the threat related to radioactive matrial catagrolization requaierment and responsibility state and licines with graded approach is applied considering different security level A, B, and C.
- The other one related to physical protiction of nuclear materials and thier facilites.



4. National implementation of a security system give priority to:

- Appropriate regulatory framework.
 - Creation of national registries.
 - Securing Categories 1, 2 and 3 radioactive sources in use and storage.
 - Securing radioactive material in transport also considering a graded approach with prudent management practice, basic and enhanced security level, and additional security measures.
- All these priority it's in context with the recommendation of IAEA



5. Conclusions and Acknowledgements

These regulations have been compared with the IAEA nuclear security guidance, the review results show that the regulatory framework on the security of radioactive materials for SNRRA is in line with the international security recommendations, there are some improvement areas described in the table (1) which summarize the main findings that could be improved within the regulatory framework. The following main reference documents were used for the review:

1. International Atomic Energy Agency, Code of Conduct on the Safety and Security of Radioactive Sources (2004)
2. International Atomic Energy Agency, Guidance on The Management of Disused Radioactive Sources (2018)
3. International Atomic Energy Agency, Nuclear Security Recommendations on Radioactive Material and Associated Facilities Nuclear Security Series No. 14 (2011).
4. International Atomic Energy Agency, Security of Radioactive Sources, IAEA Nuclear Security Series 11-G (Rev.1) (2019)
5. Working Document on the Development of Nuclear Security Regulations (2020)