

National Report related to the Convention of Nuclear Safety

March 2023

Member State: LEBANON

The use of radiation sources and radioactive materials in Lebanon is strictly involves its peaceful applications mainly in the fields of medicine, agriculture, environment, academic research and industry. There are no nuclear installations in the country. Thus, the absence of nuclear materials over the Lebanese territory can be strongly asserted (no nuclear fuel storage or nuclear fuel reprocessing cycle). By contrast, small quantity of DU used as radiation shielding, is present in specific medical applications.

The country has no plan for adding nuclear energy to its electricity grid mix.

Lebanon conducted, under an IAEA TC project (during 2012-2014) a feasibility study for the establishment of nuclear research reactor for education and training, using among others, neutron activation and neutron diffraction techniques. The establishment of the RR will not be a national priority in the coming years.

1. Legislative and regulatory framework

a) A complete set of general safety regulations was prepared, revised and issued by the Lebanese Atomic Energy Commission. The set of the said regulations was endorsed by the government in 2021.

b) A draft nuclear law that covers safety, security and safeguards is prepared and reviewed by the office of legal affairs at the IAEA. The final version of the draft law is ready (since 2014) and will be submitted to the Lebanese Parliament for consideration, as soon as it is possible. The draft law reflects clear functions and responsibilities of the regulatory authority in line with IAEA safety standards. The draft law is under revision by the CBRN national commission in order to updated accordingly to the progress that has been made and to be in harmony with new related circumstances.

c) Significant progress was made for the strengthening of the regulatory control legal infrastructure. A regulatory decree (15512/2005) pertaining to decree-law number 105/1983, regulating the use and protection against ionizing radiations, was issued in October 2005. The Department of licensing, authorization and inspection of the Lebanese Atomic Energy Commission issued in compliance with the regulatory decree 15512/2005 and in accordance to the IAEA BSS standard (115) the conditions

and terms that should be fulfilled for any demand of licensing in the field of the use, storage, import, export, decommissioning and transport of radiation sources.

d) The regulatory body prepared the draft of the national radiation safety policy, a document is under review and will be submitted to the Government for endorsement.

e) Lebanon was made a political commitment to the implementation of i) the code of conduct on safety and security of radioactive sources (2004), ii) the IAEA guidance on transport of radioactive materials (2007), iii) the IAEA code of conduct on the Safety of research reactors (2015) and the IAEA guidance on managing disused radioactive sources

f) Lebanon is involved since 2013 in the EU-CBRN risk mitigation program. A national coordinator for CBRN risk mitigation was appointed by the Prime Minister in February 2013 and a CBRN National Commission, involving all concerned national bodies, was established by a decision by the Prime Minister in 2019. This inter agency consultative commission is working directly under the Prime Minister supervision. The RN part is represented and managed by the Lebanese Atomic Energy Commission. A national CBRN action plan for 2018-2023 was endorsed and it is under updating process to cover 2024-2028. The INSSP for Lebanon, updated on November 2022, represent most of the RN part of the above mentioned plan.

g) In 2021 the parliament ratified the joint convention on spent fuel and radioactive waste and ratified the IAEA privileges and immunities too

2. Regulatory Body

The mandates of the regulatory body in accordance with the decree-law 105/1983 and with the regulatory decree 15512/2005 and with the decision of the Minister of Public Health 705/1-2005 are:

a) Preparing safety regulations and conducting regular updating in line with the applicable international standards and norms.

b) Conducting regular inspection in the facilities using radiation sources for verification of radiation protection measures pertaining to the authorized practices.

c) Conducting Mandatory and regular individual control of workers directly or indirectly exposed to ionizing radiations in all licensed or under license procedure facilities.

d) Issuing and implementing radiation safety regulations.

e) Establishing a practical mechanism for safe disposal of radioactive waste.

f) Taking all adequate measures to ensure all rules and authorization requirements are duly fulfilled.

g) Doing the necessary safety studies for practices dealing with ionizing radiation in virtue of licensing demand.

h) Issuing authorization for all practices dealing with ionizing radiations.

i) Establishing the national register for of radiation sources and their movement.

j) Collaborating with the ministries, public and private institutions as well as relevant international organizations for human and environmental protection against ionizing radiations.

- k) Providing assistance in case of radiological or nuclear emergencies.
- l) Environmental radiation monitoring
- m) Controlling all radiation devices (detectors, generators, etc..) by checking calibration and QA/QC procedures.
- n) Reporting to relevant international organizations in the framework of ratified binding international legal instruments.

The lessons learned via the implementation of the regulatory decree n15512/2005, during the last 15 years, are now taken into account by updating the above mentioned regulatory decree and will empower the radiological safety in the country via a new policy for radioactive waste management and to cover the safe domestic transport of radioactive sources according to the latest IAEA safety standards.

The Lebanese Atomic Energy Commission is designated by decree-law as the national control authority and it ensures all tasks mentioned above. However, the Minister of Public Health signs the authorizations for all practices dealing with radiation sources upon written clearance from the Lebanese Atomic Energy Commission. In the same way, the Minister of Public Health takes the necessary measures, upon binding suggestion from the Lebanese Atomic Energy Commission; against facilities if there is any relevant violation of rules and authorization requirements.

In 2009 the regulatory authority started the implementation of the radiation sources national register by using RAIS software. In 2014 a comprehensive national register for radiation sources was ready and monthly updated.

The Lebanese Atomic Energy Commission is related to the Lebanese National Council for Scientific Research which is directly related to the Prime Minister. The National Council for Scientific Research allows a part of its annual budget for the Lebanese Atomic Energy Commission. This part figures in different budget lines in the annual budget of the commission.

The LAEC conducts regulatory research and it is active in different research axis where no radioactive sources are used.

The draft nuclear law that was prepared takes into account the establishment of an independent regulatory authority that will be linked directly to the Prime Minister.

3. Responsibility of the license holder, assessment and verification of safety

The regulatory body gives licenses for a given period depending on the kind of the practice. The regulatory body makes two inspections per year in the licensed facilities in order to ensure that the license holder meets its primary responsibility of safety.

4. Human resource development and safety culture

The regulatory body organizes practical and educational training sessions for workers of the licensed facilities. Furthermore, it offers to them, throughout its technical cooperation program with the IAEA and the Arab Atomic Energy Agency (AAEA) special on job training, scientific visit and involves them in relevant regional projects related to the field of protection against ionizing radiations.

The regulatory body issued already some code of practices and it is working to cover all peaceful use of radiation sources in hospitals, industries and academic institutions.

The Lebanese Atomic Energy Commission established in 2010, in cooperation with Beirut Arab University, a one-year diploma in radiation protection and safety of radioactive sources. This diploma is dedicated to physicists, chemists and biologists radiologist, holding a BSc and to pharmacists and medical doctors. The syllabus of this diploma is the same as the IAEA – PGEC educational program.

A MoU of cooperation in radiation safety was signed between the two institutions in October 2010, renewed in October 2013, in October 2017 and in November 2020. The diploma transformed to an MSc degree since 2013.

In addition, a MoU was recently signed with the Faculty of Sciences-The Lebanese University (the Biggest and the sole public university in the country) for establishing a Radiation Safety Diploma. This diploma started its first year in October 2015.

Recently, in 2021 the LAEC signed a MoU with La Sagesse University, and started in 2022 a university diploma on radiation safety.

The Lebanese Atomic Energy Commission, in the framework of this diploma, organizes in cooperation with universities, awareness seminars in radiation safety and the use of radiation sources in Lebanon.

Different training courses in RN emergency response were organized from 2013 until 2022. More than 340 trainees from first responder agencies were trained via EU and IAEA projects and via bilateral cooperation with France, USA and Italy. CBRN emergency response class A and B suits, decontamination stations, and portable detectors were delivered also to first responder agencies. First responders participated to several exercises and simulations involving nuclear emergency scenarios.

5. Radioactive waste management

The Lebanese Atomic Energy Commission established in its premises a temporary storage for orphan and out of regulatory control radioactive sources. Lebanon is working closely with IAEA to increase the safety and security of the temporary radioactive waste storage. This temporary storage is the only one existing at the national level.

Different industrial and medical facilities have radioactive waste stores within their premises. These stores are licensed by the regulatory authority and regularly inspected.

In cooperation with IAEA, several repatriation missions of disused category I and II sources were conducted:

- i) 36 60-Co sources (irradiation facility for research) were repatriated in 2009.
 - ii) One 60-Co teletherapy head was repatriated in 2011 (from American University Hospital – Beirut).
 - iii) One 60-Co teletherapy head was repatriated in 2015 (from Notre Dame de Secour Hospital – North Lebanon).
 - iv) One 60-Co teletherapy head was repatriated in 2016 (from Hotel Dieu de France Hospital – Achrafieh-Beirut).
 - v) Three 60-Co teletherapy heads were repatriated in 2018 (from Rizk Hospital - Achrafieh, HOTEL Dieu de France Hospital - Achrafieh and Centre Hospitalier du Nord - Zgharta)
- A close cooperation between the Lebanese Customs and the regulatory body established a safe temporary store at Beirut and Tripoli seaports used for radioactive contaminated items seized during the import/export trade.

A new partnership with Germany started in 2022 for a sustainable management of radioactive waste including the possibility of building a long term radioactive waste store in close cooperation with the Lebanese army.

6. Emergency preparedness

The regulatory body works closely with different national institutions dealing with the national emergency and the national emergency planning in order to include the radiological emergency in the already exist mechanism.

A national committee was designated, via a decision of the Prime Minister, to prepare a national CBRN emergency response plan in 2010. The draft of the national plan is submitted to the government in March 2011 for consideration. In 2016 the CBRN national response plan was considered as a part of the national disaster management plan.

Lebanon installed in 2014 a radiation early warning system that consists in the installation of 20 stations covering more than 80% of the country. In 2018, the Early Warning System network was developed and it is containing now 26 stations covering 100% of the country.

A well trained team on nuclear emergency formed from the Lebanese army, the Civil Defense, Beirut Fire Fighters, Red Cross, and Police is in place. This institutions are participating in different simulations and drills that can permit to test their readiness and the level of inter-agency coordination and cooperation according to the role, responsibility and skills of each of them.