AZERBAIJAN

a) National framework for management of spent fuel and radioactive waste

The Republic of Azerbaijan doesn't have any nuclear facilities, however radioactive sources are widely used mainly in the oil and chemical industries, research institutions, medical institutions (radiotherapy and nuclear medicine). So the radioactive waste is mostly a result of institutional activities (in solid form, mostly disused sealed sources).

The policy of the Republic of Azerbaijan regarding the management of RW is defined in the draft law on Radiation Protection and Nuclear Security and focused on the following:

- RW management is subject of state regulation and is carried out only by entities that have received authorization (license) from the regulatory authority;
- The prime responsibility for RW and facilities shall rest with the holders of authorizations and may not be delegated.
- The costs associated with RW management, including its final disposal must be borne by the party that generates RW, following the principle "the contaminant pays";
- In the case of RW with unknown owner, state that bears the responsibility for its management;

The following principles have to be taken into account in the management of the radioactive waste:

- RW generated must be kept to the minimum practicable in terms of both volume and activity using appropriate design, operation and decommissioning activities, including reuse of material generated;
- The interrelations among all stages of RW generation and management must be taken into account;
- RW must be managed safely, including ensuring its long-term passive safety;
- A graded approach must be taken to RW management arrangements, commensurate with the likelihood and possible consequences of, and the level of risk associated with, a loss of control over the waste;

Responsibilities of RW generators:

- RW generators must ensure the safe management of RW until it is transferred to a RW management company, complying with the requirements of legal acts on nuclear and radiation safety and security.

- The responsibility of the RW generator for the safe management of the waste shall be terminated:
- If the RW is transferred to a radioactive waste management company;
- If the RW is legally exported from Azerbaijan and permanently accepted by the recipient in accordance with the law of the country of the recipient;
- If, during the storage of the RW, its activity falls below clearance levels as a result of the natural decay of radionuclides.

Classification of the waste The criteria for determining the levels of activity waste, depending on the value of the dose rate (mGy/h) (at a constant distance from the test surface of 0.1 m):

- Low level – threshold dose rate 0.001 to 0.3 mGy/h
- Intermediate level – from 0.3 to 1.0 mGy/h
- High level – more than 10 mGy/h

b) National legal and regulatory framework

The main legislation in relation to the management of the radioactive waste is:

- Law on radiation safety of population No 423-IQ (30.12.1997)
- Law on sanitary and epidemiological well-being No 371 (10.11.1992)
- Law on protection of the environment No 678- IQD (08.06.99)
- Law on export control No 772-IIQ (26.10. 2004)
- Sanitary Rules on operation with Radioactive Waste (1985)

On 24 April 2008 President of Azerbaijan signed a Decree on establishment of a single nuclear and radiological regulatory authority - the State Agency on Nuclear and Radiological Activity Regulations (SANRAR), under the Ministry of Emergency Situations. State regulatory functions relating to nuclear and radiation safety is not combined with a practice that is subject to regulation.

Main functions of the SANRAR:

- Development and improvement of the legislative framework (laws, regulations, guides etc.)
- Licensing
- Inspection
- Enforcement
- Review and assessment
- Maintaining of inventory of radiation sources and facilities
- Coordination of emergency response and preparedness.

c) Radioactive waste management, decommissioning and spent fuel strategy

Long term storage of radioactive wastes and disused sealed sources in Azerbaijan is carried out by the Specialized Enterprise “Isotope” (established in 1962), which presently is under authority of the Ministry of Emergency Situations. It is located on 32th km of Baku-Shamakhi highway in Pirekeshkul settlement. The total area are 6 ha (600 x 100) assembly to the supplier or country of origin.

Activities of Specialized Enterprise “Isotope

- Collection of RW, treatment, long term storage, and taking for disposal and management of radioactive wastes, and also operation of radioactive sources;
- Transport by vehicle of radioactive wastes and sources;
- Decontamination of contaminated radioactive equipment and special clothes;
- Safety and security of radioactive waste and disused sealed sources;
- Participation in radiation emergencies;
- Monitoring of radiation in environment.

Financial resources available to support safety of the facilities for RW and disused sealed sources management are state budget through the budget of Ministry of Emergency Situations or service activity of Specialized Enterprise “Izotop”.

As this enterprise is state-owned public entity all expenses regarding decommissioning, closure and etc. should be financed through the state budget during implementation.

d) Waste from decommissioning and remediation

On Absheron Peninsula two production sites of Baku Iodine Plant were situated, which functioned in 30th - 90th of last century. Natural iodine was extracted from oilfield water pumped out together with oil and collected into artificial raw water lake after separation. Adsorption on activated charcoal has been applied for extraction of iodine from water. Together with other substances, isotopes of radium and their decay products collected in charcoal. In the order of President, approving the complex plan of measures for improving ecological situation in the country, the Ministry of Emergency Situations (MES) was appointed as an authority responsible for rehabilitation of the sites.

Surakhany and Ramany production sites of Baku Iodine Plant were located in vicinity of settlements with the same name and threatened health and welfare of people.

After finishing decommissioning, decontamination, transportation and disposal works on request from the MES the IAEA Expert Mission with the purpose to assess the effectiveness of remediation activities undertaken on the sites was organized. The remediation of the Surakhany and Ramany sites was effectively completed by the Ministry of Emergency Situations to meet the anticipated future recreational and commercial land use conditions.

All wastes which came from these sites have been disposed at the disposal facility near the territory of waste management facility.

The current design and construction of the disposal facility appears to be suitable for the short-term management of the radioactive waste disposed. Construction of a final cap over the disposal cells filling in the current access roads to a grade similar to the level of the top of the disposal cells with an additional layer to promote run-off and prevent erosion will ensure long-term permanence of the disposal facility.

Table 1 Radioactive Waste In Storage (including spent fuel that is considered waste)

Route Waste Class	Processed (type)/Un processed	Total Current Volume (m3)	Estimated Disposal Volume (m3)	Distribution (%)							Planned Disposal Route (if known)
				RO	FFE	RP	NA	DF	DC/ RE	ND	
All Classes				0	0	0	0	-	0	-	-
All Classes				0	0	0	0	-	0	-	-

NEWMDB waste origin type codes:
RO – reactor operations
FFE – fuel fabrication & enrichment
RP – fuel reprocessing
NA – nuclear applications
DF - defence
DC/RE - decommissioning & remediation
ND - Not Determined

Table 2 Radioactive Waste Disposed (as disposed volume)

Waste Class	Processed (not)	Total Volume (m3)	Distribution (%)							Disposal Route Used
			RO	FFE	RP	NA	DF	DC/RE	ND	
All Classes		0	0	0	0	0	-	300000	-	Near surface

Table 3 Spent fuel in Storage (MTHM)

Type	Current Amount (NPP)	Current Amount (Research Reactors)
Total Spent Fuel Storage	0	0
Wet storage (AR)	0	0
Wet storage (AFR)	0	0
Dry storage (AR)	0	0
Dry storage (AFR)	0	0
Total spent fuel held in storage for other countries (amounts also included above)	0	0

Table 4 Spent fuel sent for reprocessing (in the country or sent to another country) (MTHM)

Type	Current Amount (NPP)	Current Amount (Research Reactors)
Total amount Spent Fuel sent to	0	0

Reprocessing (in your country)		
Total amount Spent Fuel sent to Reprocessing (in another country)	0	0
Total amount of Spent Fuel received from another country for reprocessing and recycling	0	0
Total amount of Spent Fuel (MTHM) or radioactive waste (cubic metres) returned to country of origin for storage/disposal	0	0

Table 5 Example of a translation matrix (from NEWMDB) that can be used for transition from a national classification system to IAEA classification

National Waste Classification Name	**VLLW**	**LLW**	**ILW**	**HLW**
LLW	LLW	LLW		
ILW			ILW	
HLW				HLW

Table 6 Waste management facilities

Type	**Planned**	**Construct.**	**Commiss.**	**In Operation**	**Shutdown**	**Decomm.**	**Other**	**Total**
Spent Fuel Storage	0	0	0	0	0	0	0	0
Spent Fuel Reprocessing and Recycling	0	0	0	0	0	0	0	0
Spent Fuel Conditioning	0	0	0	0	0	0	0	0
Spent Fuel disposal	0	0	0	0	0	0	0	0
Waste processing	0	0	0	1	0	0	0	1
Waste storage	0	0	0	3	0	0	0	3
Waste disposal	0	0	0	2	0	0	0	2

Table 7 Summary of major sources of waste

Type	**Planned**	**Construct**	**Commiss.**	**In Operation**	**Shutdown**	**Decomm.**	**Other**	**Total**

Research reactors	0	0	0	0	0	0	0	0
Nuclear Power reactors	0	0	0	0	0	0	0	0
Spent Fuel Reprocessing and Recycling	0	0	0	0	0	0	0	0
Other	0	0	0	0	1	3	0	0

Table 8 Future prospects

Type	**Current amount**	**Estimated Current amount when prepared for disposal**	**Current Disposal Capacity**	**Total forecast at 2030**	**Disposal Capacity 2030**	**Total forecast at 2050**	**Disposal Capacity 2050**
Spent Fuel Storage	0	0	0	-	-	-	-
Wet storage (AR)	0	0	0	-	-	-	-
Wet storage (AFR)	0	0	0	-	-	-	-
Dry storage (AR)	0	0	0	-	-	-	-
Dry storage (AFR)	0	0	0	-	-	-	-
Total amount Spent fuel sent to Reprocessing and Recycling	0	0	0	-	-	-	-
Total amount Spent fuel disposed	0	0	0	-	-	-	-
Waste in storage							
Waste disposal	30000	0	8000	-	-	-	-