SLOVAK REPUBLIC (June 2003)

1. NATIONAL AND REGULATORY FRAMEWORK

1.1 National framework

1.1.1. National Policy

Radioactive waste in the Slovak Republic is generated by both electricity production (radioactive waste from NPPs) and utilisation of radioactive sources in industry, medicine and research (institutional radioactive waste).

The general strategy for radioactive waste management established by Slovak government is based on following steps:

- Processing of radioactive waste into the form suitable for disposal or long-term storage.
- Near surface disposal of low level and intermediate level radioactive waste and long-term storage of waste unacceptable for near surface disposal.
- Development and research of deep geological repository for disposal of spent nuclear fuel and long-lived radioactive waste.

This strategy is in accordance with the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management that was ratified by the Slovak Republic as one of the first IAEA member's states at the end of September 1998.

1.1.2. Institutional framework

The use of nuclear energy is regulated by Nuclear Regulatory Authority of Slovak Republic (UJD SR) in the area of nuclear safety and by State Faculty Health Institute (under Ministry of Health) in the area of radiation protection.

UJD SR supervises all phases of radioactive waste management at nuclear installations and final phases of institutional radioactive waste management. The pre-conditioning phases of management of institutional radioactive waste are supervised by Ministry of Health.

1.2 Regulatory framework

1.2.1. Regulatory function

The UJD SR was established as the successor of the former Czechoslovak Atomic Energy Commission on January 1, 1993.

UJD SR is a central state authority for the area of nuclear supervision. It ensures state supervision of the nuclear safety of nuclear installations, the supervision of the radioactive waste management and spent fuel management as well as supervision of nuclear material.

The State Faculty Health Institute ensures the state supervision in the area of radiation protection.

IAEA IRRT mission was held at UJD in the November 2002 to evaluate efficiency and effectiveness of supervision of nuclear safety in Slovakia. In the radwaste management area the findings were mainly in the field of co-operation between both regulatory bodies (nuclear safety and radiation protection).

1.2.2. Organisation and resources

The principal organisational chart of UJD SR is given on Figure 1.

UJD SR is financed by state budget. Rules of implementation of UJD's budget are given by Ministry of Finance with certain flexibility for UJD SR

2. LEGISLATION AND REGULATION

2.1 Legislation

The main legislation regulating waste management activities includes the following laws:

- Act 130/1998 Coll.(Atomic Act) on peaceful use of nuclear energy specifies the responsibilities associated with radioactive waste management.
- Act 272/1994 Coll. as amended on protection of public health establishes the responsibility of regulatory body under Ministry of Health in the area of radiation protection and sets up the provisions for activities with radiation sources.
- Act 127/1994 Coll. as amended on environmental impact assessment defines the EIA process to be implemented prior to the licensing steps of siting and decommissioning of nuclear installation and its basic changes.
- Act 254/1994 Coll. as amended on creation of state fund for NPP decommissioning, spent fuel management and disposal investment gives the details on creation and use of fund.

2.2. General regulations

The following general safety regulations, issued by the Government, relate to the radioactive waste management:

- Regulation 190/2000 Coll. on radioactive waste management and spent fuel management gives requirements for all phases of management with radioactive waste and spent fuel.
- Regulation 246/1999 Coll. on safety documentation for decommissioning defines the scope and content of documentation to be submitted to the UJD SR within whole process of decommissioning.
- Regulation 284/1999 Coll. on transport of nuclear material and radioactive waste specifies the documentation to be submitted and conditions to be fulfilled in connection with the transport of radioactive material.

2.3. Guidance and specific regulations

The detailed safety provisions are given by UJD SR guides which are not legally binding documents but facilitate the fulfilment of regulatory requirements.

There are so far three guides related to the waste management:

- Safety guide on safety documentation for decommissioning.
- Safety guide on disposal of radioactive waste (under preparation).
- Safety guide on handling and processing of radioactive waste from nuclear applications (under preparation).

2.4. Licensing procedures

The licensing process for radioactive waste management installations as for all nuclear installations includes five principal steps. The permits for siting, construction, operation including commissioning, individual steps of decommissioning and site release are issued by municipal environmental office on the basis of the act 50/1976 Coll. on territorial planning and construction rules (Civil Construction Act) and the decisions of UJD SR based on the Atomic Act.

The safety documentation shall be prepared by applicant and it is the subject of the regulatory bodies approval, for nuclear safety is responsible UJD SR, for radiation protection Ministry of Health, for physical protection and fire protection Ministry of Interior and for general safety Ministry of Labour, Social Policy and Family.

3. CURRENT STATUS

3.1. National status

3.1.1. Waste classification and sources

According to their activity, radioactive waste is classified into classes as follows:

a) transition radioactive waste
radioactive waste which will decay within the period of temporary storage and may then be cleared

b) low and intermediate level waste (LILW)
waste with activity higher then clearance level and residual heat release lower than 2 kW/m3:
b.1. short lived waste – waste with nuclides half-life less or equal around 30 years with average alpha activity lower than 400 Bq/g acceptable after conditioning for near surface disposal
b.2. long lived waste – long lived and alpha waste whose activity concentration exceeds the limit for near surface disposal

c) high level waste (HLW)
waste with residual heat release higher or equal to 2 kW/m3

As the original design of NPPs was based on the conditioning and disposal of operational waste only after final shutdown the radwaste produced during the operation has been continuously filling in available storage capacity. So nearly 7 700 m3 of liquid waste were stored at the end of 2002, representing 64% of storage capacity at Bohunice site. Total volume of solid waste stored at WWER NPPs reached 3 300 m3.

The radwaste generation during nuclear installation decommissioning is connected with the range of decontamination, dismantling and demolition work.

Other radioactive waste arise form a number of facilities using radioisotopes in medical, research industrial applications.

3.1.2 Waste management strategy

The producer of radioactive waste shall assure, through technical and organisational measures, to keep the amount and activity of the waste as low as reasonably achievable. The specific programme for radwaste minimisation is prepared, annually evaluated and also the inspection activity of UJD SR is focused on this issue.

The main strategy for different phases of radioactive waste management is given in article 1.1.1.

3.1.3. Current issues

Underground repository development is one of major challenge for national radwaste programme. It is assumed that during design operational lifetime the individual NPP units will

produce 2 500 t of spent nuclear fuel and 3 700 t of radwaste unacceptable for Mochovce near surface repository (including radwaste generated at A-1 NPP). The deep geological disposal is supposed to be the best solution for spent fuel and tjis kind of radwaste.

Development of deep geological repository in Slovakia started in 1996. In the frame of this project the preparatory works have begun and activities oriented to public involvement have been realised. On the basis of preliminary evaluation of existing geological data 15 sites potentially appropriate for underground repository were identified. Further investigation has led to reduction of this number to 4 sites in two possible host rocs, which have been proposed for more detailed research. Development process of deep geological repository is followed by UJD SR through its active participation in assessment meetings for individual gradual steps.

3.2 Regulatory issues

The process of atomic act amendment has started in early 2003 and a lot of changes and additional provisions connected with the accession process to the European Union shall be included into the amended act.

The National report in connection with the Joint convention on the safety of spent fuel management and on the safety of radioactive waste management was prepared and UJD SR as co-ordinator submitted the National report to the IAEA

3.3. R&D programme

On the basis of UJD SR requirements the programme for evaluation of FRC containers (used for disposal) lifetime has been prepared. According to this programme different tests are being proposed to carry out in the following four years. The results of mentioned tests will be used as input for evaluation process and will lead to the upgrading of repository safety analyses.

Study on assessment of gas generation in disposal system is in preparation stage where processes of microbiological and radiochemical degradation of cellulose materials inside of FRC containers are under consideration from long-term safety point of view.

Preparatory works have started in the area of PSA to allow identification of the most important parameters with influence on uncertainty of calculation results and to determine degree of conservatism of deterministic analyses. Sensitivity analysis used in this approach would have to lead to more realistic data.

Figure 1. **The principal organisational chart of UJD SR**