

LEGAL AND REGULATORY FRAMEWORK FOR RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING IN SLOVAK REPUBLIC

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ABSTRACT

Slovakia is dependent on external primary energy resources, importing more than 80% of its needs, particularly oil, gas and nuclear fuel from Russia. Slovakia currently operates 5 nuclear units in two sites and their share on total power production is about 50%. There are in operation two VVER 440/230 (first generation) units and two VVER 440/213 (second generation) units at Jaslovské Bohunice and one VVER 440/213 unit at Mochovce. At Mochovce site commissioning of second VVER 440/213 unit is expected at the end of 1999.

The legal structure for the regulation of nuclear safety consists of new acts adopted since independence of the Slovak Republic and of other regulations adopted prior to the creation of the Slovak Republic. The legal system can be categorized as follows: The Constitution is the highest basic law and is enacted by the Parliament. Acts are basic laws specifying principles in various areas and are promulgated by the Parliament. As one of the basic laws, the Atomic Energy Act governs the peaceful use of nuclear energy in Slovak Republic. Regulations are rules issued by central governmental authorities (e. g. ministries) to pose requirements for the implementation of acts and they are approved by government. Regulatory guides contain specific requirements and recommended approaches to facilitate the fulfilment of relevant requirements and are published by the regulatory bodies. International conventions and agreements that were ratified by the Parliament and by the President are to be included just behind the constitution and have power as a law.

INTRODUCTION

The development of nuclear power in the Slovak Republic proceeded together with the Czech Republic within the Czecho-Slovak Federal Republic (CSFR) until the January 1, 1993 when the CSFR was split into two independent states. Until this date, the responsibility for the nuclear safety supervision was under the Czechoslovak Atomic Energy Commission (CSAEC).

Following the CSFR splitting the Nuclear Regulatory Authority of Slovak Republic (ÚJD SR) was established as a central state authority for the area of nuclear safety supervision. However according to Slovak legislation the ÚJD SR kept in force those nuclear regulations and decisions issued by the CSAEC.

Therefore in the field of nuclear energy there are in force regulations from the period of CSFR as well as those prepared by the Slovak Republic central state authorities.

CSFR REGULATIONS

The legal basis for regulatory involvement in the area of peaceful use of nuclear energy was until 1st July 1998 the act No 28/1984 on state supervision of nuclear safety. The act specified rights and responsibilities of the regulatory body in the supervision of requirements and conditions for nuclear safety. The act also defined responsibility for regulatory review and approval of safety related documents and gave rights to perform inspections.

The basic legal document for supervision in the area of radioactive waste management is the regulation of CSAEC No 67/1987. The regulation specifies the basic safety requirements for all steps of radioactive waste management from collection to disposal of radioactive waste. It also specifies

mandatory procedures for management of radioactive waste for authorities and organisations, which design, construct and operate the nuclear facilities.

No specific regulations were issued for decommissioning in the frame of CSFR regulations.

SLOVAK REPUBLIC REGULATIONS

After Slovak Republic start of existence on 1st January 1993 the act of National Council of SR No 2/1993 on organisation of ministries and other central state authorities was issued. According to the act the Nuclear Regulatory Authority of SR was established for the area of nuclear safety supervision with the following responsibilities:

- state supervision of nuclear safety of nuclear facilities including supervision of radioactive waste management, spent fuel management and supervision of further stages of the nuclear fuel cycle (The list of nuclear facilities in the Slovak Republic is shown on the Fig. 1)
- supervision of nuclear material (inspection and accounting),
- review of the nuclear power programme objectives,
- fulfilment of obligations arising from international agreements concerning nuclear safety and management of nuclear material.

The act specifies that the Chairman of Nuclear Regulatory Authority can only be appointed and recalled by the government of the Slovak Republic.

NUCLEAR FACILITY	NET POWER, MW _e	TYPE	START UP (SHUTDOWN)
NPP A1	110	HWGCR	1972,(1977)
NPP Bohunice 1,2	2x408	WWER440/230	1978, 1980
NPP Bohunice 3,4	2x408	WWER440/213	1984, 1985
NPP Mochovce 1,2	2x408	WWER440/213	1998,1999
NPP Mochovce 3,4	2x408	WWER440/213	construction
Interim Spent Fuel Storage		wet, pool	1987
Conditioning Centre		cementation, incineration, bituminization, compaction	1999
Bituminization- VÚJE		experimental facility	1984
Incinerator- VÚJE		experimental facility	1986
LLW & ILW disposal		near surface	1999

Fig. 1 Nuclear facilities in the Slovak Republic

After foundation of Slovak Republic many acts concerning the peaceful use of nuclear energy were prepared and issued as follows:

- The act No 254/1994 on creation of state fund for NPP decommissioning, spent fuel management and disposal investment (Fund). According to the act owners of NPP have to pay the contribution to this Fund at the level of 10 % of market price of electric power produced in NPP. State grant, penalties setting by ÚJD SR and interest from Fund's deposit in bank are another source of Fund. The financial resources can be used for nuclear facility decommissioning and for management of spent fuel and radioactive waste arising from decommissioning. The respective regulation No 14/1995 of Ministry of Economy explains the conditions of payment and funding.
- The act No 272/1994 on protection of public health. The act establishes the responsibilities of regulatory body under Ministry of health and its part specifies the conditions for protection against ionizing radiation.

- The amendment of the act No 272/1994 is in power from 1st January 1997 as an act No 290/1996. This act gives precise conditions for management with ionizing sources, sets up limits for specific activity and total activity of radionuclides to be ionizing sources, limits of radiation doses for personal and public, clearance criteria and clearance levels for metallic material.
- The act No 127/1994 on environmental impact assessment. The act sets up the responsibility of Ministry of Environment to evaluate the proposals for all new facilities, which can influence environment. The scope of the evaluation includes all new nuclear facilities and also the changes exceeding 50 % of former extend of activity of respective nuclear facility. Direct and indirect impacts resulting decommissioning and new activities to urban structure, health, living conditions and satisfaction of people including personnel are assessed.

The legal basis for radioactive waste management and decommissioning and division of responsibility between different central state authorities is shown on the Fig. 2.

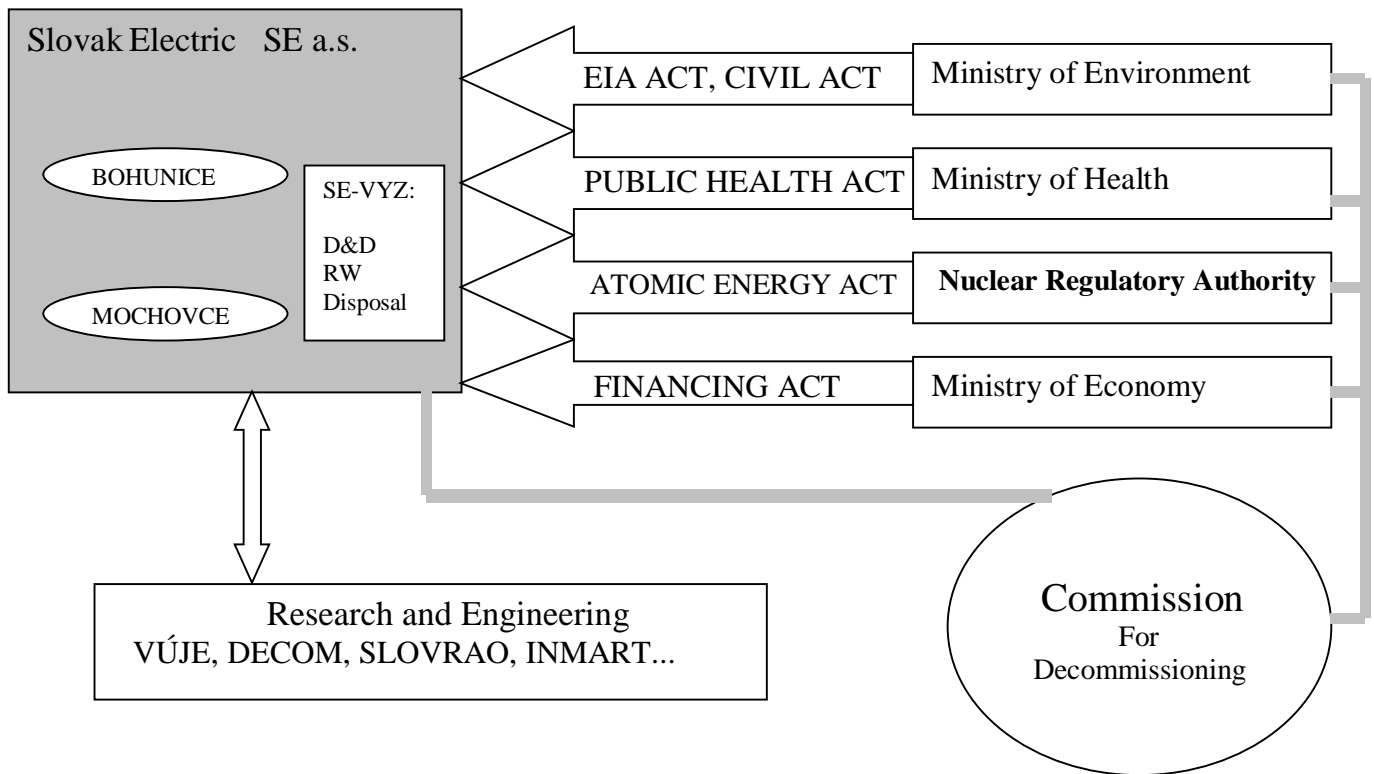


Fig. 2 Slovak decommissioning and radwaste management legal basis

The duties and responsibilities in the field of nuclear and radiation safety are divided between several central state authorities:

Nuclear Regulatory Authority (ÚJD SR) - ÚJD SR is responsible for regulation and supervision of the use of nuclear energy. ÚJD SR is also responsible for supervision of radioactive wastes from nuclear installations and for repositories for all types of radioactive wastes and for accounting and control of nuclear materials.

Ministry of Health - State Institute of Public Health under the Ministry is responsible for radiation protection and for the control of radiation protection measures inside nuclear installations and off-site. It is also designated as the responsible authority for supervision of radioactive wastes from outside of nuclear fuel cycle until their conditioning and disposal.

Ministry of Environment - Municipal construction offices under this Ministry are granting siting, construction and operation licenses and are operating the radiation monitoring network. Ministry is responsible for environmental impact assessments and is chairing the Governmental commission for radiological emergencies.

Ministry of Interior - Ministry is responsible for fire protection, physical protection of nuclear materials and facilities, for civil defence during radiological accidents and for the assistance in case of nuclear accident or radiological emergency.

Ministry of Economy - Ministry is responsible for promoting and developing a nuclear power programme.

Ministry of Labour, Social Policy and Family - State office of occupational safety under the Ministry is responsible for industrial safety.

THE NEW ATOMIC ACT

In 1994 Slovak government ordered ÚJD SR to prepare the new act on peaceful use of nuclear energy. This act replaced from 1st July 1998 the act No 28/1984 on state supervision of nuclear safety. The main objectives of the new act are:

- the establishment of provisions for use of nuclear energy in more complex and integrated form,
- clear distinction in responsibilities of various ministries (health, economy, environment, interior etc.)
- the establishment of provisions for some areas so far uncovered or covered partially [decommissioning, emergency preparedness, liability for nuclear damages, physical protection, radioactive waste management, authorisation of organisations and individuals]
- the reflection of international agreements and obligations [Vienna convention on civil liability for nuclear damages, Nuclear safety convention]

The act contains also paragraphs on radioactive waste management and decommissioning of nuclear facilities.

Radioactive waste is defined as non-useable materials in gaseous, liquid or solid form, which may not be released into the environment because of content of radionuclides in them or because of contamination by radionuclides.

The main ideas of radioactive waste management paragraph are:

- the generator of radioactive waste shall be responsible for the safe management of this waste from its generation until it is transferred to a radioactive waste repository, unless otherwise specified by Authority
- costs associated with radioactive waste management from generation to disposal, including monitoring of radioactive waste repositories after they have been sealed and the relevant research and development work, shall be reimbursed by the generator of the waste
- in the case of radioactive waste where the generator is not known, or where the generator is not capable of managing radioactive waste, the Authority shall appoint a legal person or a natural person who has a radioactive waste management authorisation. In its decision the Authority shall define the scope of management of this radioactive waste and the method of reimbursement of costs

- costs of management of radioactive waste where the generator is not known shall be reimbursed by the State Fund for Decommissioning of Nuclear Power Plants and Management of Spent Nuclear Fuel and Radioactive Waste. In the event that the generator of the radioactive waste is subsequently identified, he shall reimburse the costs arising from management of the radioactive waste to this Fund
- all actions during radioactive waste management shall be directed towards safe disposal of this waste
- safe disposal of radioactive waste shall be the responsibility of a legal person appointed or entrusted for this purpose by the Ministry of Economy of the Slovak Republic on the terms established in this Act and by the specific regulations. A radioactive waste repository may only be sited on land owned by the State
- the generation of radioactive waste shall be so managed by its generator, using technical and organisational measures, that its quantity and activity are kept to the lowest reasonably achievable level
- importation of radioactive waste into the territory of the Slovak Republic is prohibited, except for the return of radioactive waste which arose during reprocessing and conditioning of radioactive materials exported for this purpose, provided the re-importation of this waste has received a permission in advance from the Authority

Decommissioning of nuclear facilities is defined as activities following its final shutdown with the aim of releasing the site of nuclear facility after dismantling or to use the facility for other purposes.

The main ideas of paragraph on decommissioning are:

- the operator is responsible for decommissioning of nuclear facility including ensuring of financial resources
- decommissioning may start after granting the permission/ licence by regulatory body. The permission is granted on the basis of application supported by safety analysis documentation. In case that decommissioning is running in more phases the permission is required for each phase
- the act requires initial and ongoing (conceptual) decommissioning planning as well as final decommissioning safety documentation for individual phases of decommissioning including radioactive waste management and final survey report verifying completion of the decommissioning works
- based on evaluation of conditions accomplishment for restricted or unrestricted release ÚJD SR issues the licence termination or in case of restricted release permission for the use of the site for another nuclear facility purposes.

The set of respective regulations as proposed by the new atomic act is prepared in following areas:

- Accounting and inspections of nuclear materials, special and dual use components
- Transportation of nuclear materials
- Physical protection of facilities, materials and radioactive wastes
- Quantities of nuclear materials excluded from application of Vienna Convention
- Nuclear safety during construction, operation and decommissioning of nuclear facilities (including safety reports)
- Radioactive waste and spent fuel management
- Training and qualification of personnel
- Quality assurance
- Reporting of operational events
- Emergency planning

These regulations specifies more deeply the new act provisions and are in stage of preparation.

LICENSING PROCEDURE

The permits for siting, construction and operation of nuclear facilities are issued by municipal environmental office on the basis of the act No 50/1976 on territorial planning and construction rules (so called civil act). The act requires preparation by the applicant of safety reports for site permit, construction permit and operational permit as well as for decommissioning and termination of licence. All of the safety reports are subject to the regulatory bodies approval, for nuclear safety is responsible ÚJD SR, for radiation protection Ministry of Health, for fire protection Ministry of Interior and for Safety at work Ministry of Labour, Social Policy and Families. The basic scheme for licensing of operation is shown on the Fig. 3.

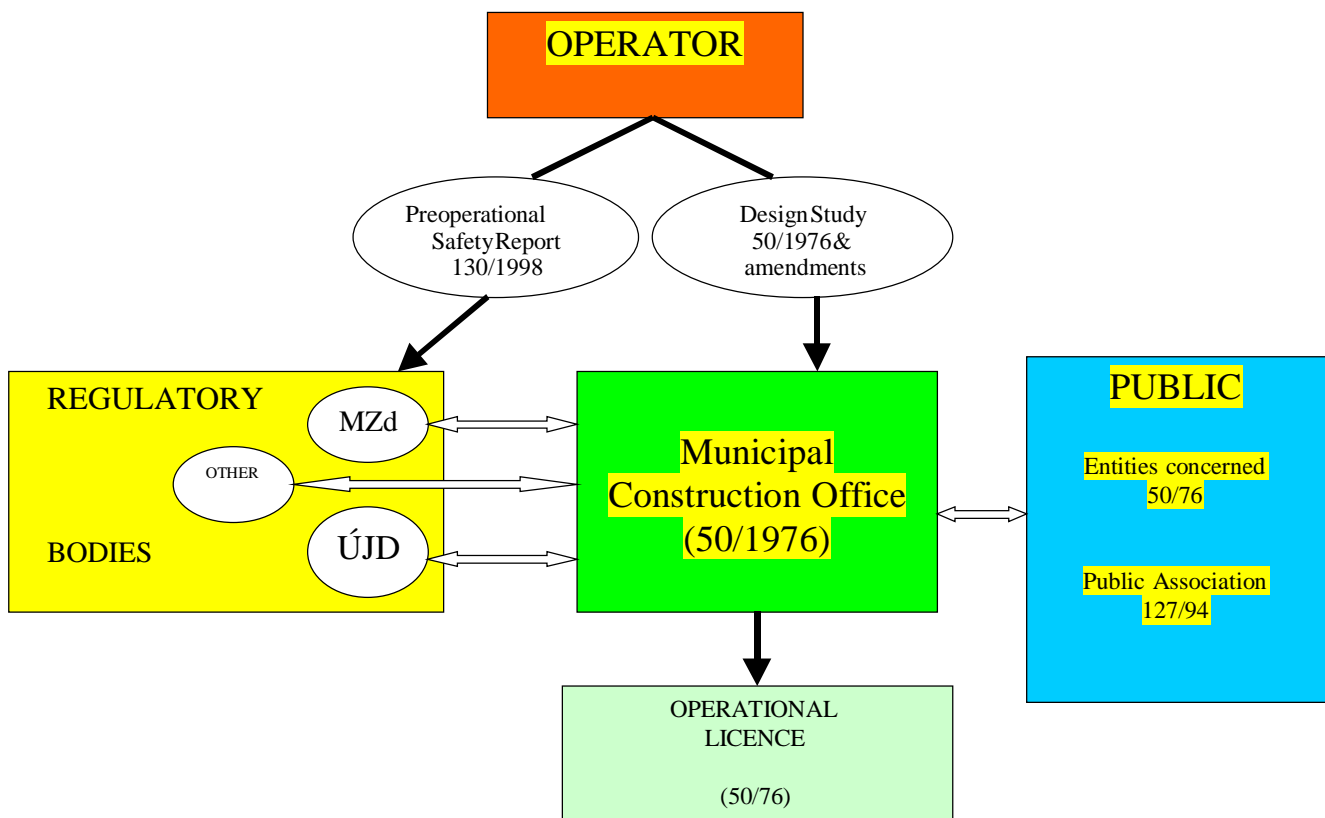


Fig. 3 Licensing of operation

CONCLUSION

During the last years the activities in the field of radioactive waste management and decommissioning have been developing significantly in the Slovak republic.

The near surface disposal facility for disposal of low and intermediate level waste was built and the operator performed some improvements according to ÚJD SR requirements. A permission for commissioning this nuclear facility was issued on October 1999. The surface disposal facility located near Mochovce NPP is the only one repository in Slovak Republic. The repository was built in geological formations with low permeability and high sorption capacity and additional artificially constructed clay

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layer surrounded the disposal vaults. The temporary and final covers are designed to avoid water penetrations into the disposal vaults. The repository is designed for solid and solidified low and intermediate level radioactive waste disposed of in special fiber reinforced concrete containers (license of French company Sogefibre) as an additional engineering barrier. The operational permit is being granted after assessment and approval of Preoperational safety analysis report.

The construction of Bohunice conditioning centre, which is equipped with cementation, incineration and supercompaction facilities, was completed this year and the testing of the installation is going on. The centre should perform treatment and conditioning of low and intermediate level waste from V1, V2 and A1 NPPs into form acceptable for near surface disposal facility. The commission of conditioning centre is expected within this year.

The activities of the 1. phase of NPP A1 decommissioning are satisfactory going on after creation of Fund in accordance with the final decommissioning plan for this phase expecting to finish it in 2007. The conceptual plans for WWER NPP (V1,V2) decommissioning and for following phase of A1 decommissioning are also prepared.

The act for peaceful use of nuclear energy with respective regulations present the good legislative framework and the basis for supervision of all these radioactive waste management and decommissioning activities.