



THE IMPACT OF NEW REGULATIONS ON REMEDIATION OF THE AREA OF ISL IN STRAZ POD RALSKEM, CZECH REPUBLIC

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Abstract

The paper gives a short description of the situation in the area of uranium production in northern Bohemia in the Czech Republic. It gives a very short overview of legislation system, list of legislation associated with mining and remediation and procedures of mining and remediation activities licensing. At the end it gives "for discussion" some approaches and interpretation in definition of the term "mine waters".

1. INTRODUCTION

The sandstone-type uranium deposits in the northern part of the Bohemian Cretaceous basin (the so called "Northbohemian Cretaceous") were discovered in the early 1960s. The most important area, with this type of deposits are situated in the lowest part of the upper Cretaceous sedimentary complex, in the so called Straz tectonic block. The main production activities of the Czechoslovak Uranium Industry Company (CSUP) were concentrated in this area in the second half of the 1960s. The Straz block deposits were considered as the most prospective sources of uranium to cover the long-term needs of the Czechoslovak nuclear programme, which was then planned at a large scale.

The development of the CSUP production activities in the area of the Straz block was very fast, unfortunately without much considerations to the future. Two uranium deep mines (DH-1, DK-1) were in operation and one uranium deep mine (DH-2) was in the stage of preparation at the end of the 1980s. About 6 sq. km ISL production complex was also present in addition to these classical deep mines.

The gradual reduction programme of the uranium production in the Northbohemian area is connected with the whole Uranium Industry contraction programme and were caused by:

- decreasing uranium market in the USSR since the end of 1980s,
- loss of the Slovak market after the splitting of Czechoslovakia,
- low uranium demand in the Czech Republic after the previous reduction of the nuclear programme,
- decreasing uranium export possibility abroad (oversupply, high production costs),
- re-evaluation of the environmental criteria to limit the environment load, which was caused by the uranium production.

The uranium production contraction programme proper begun with the liquidation of the Hamr II Mine (DH-II) in the Straz block at the end of the 1980s.

The production of the Krizany Mine stopped in 1990 and its underground liquidation was completed in 1991.

The next production complex influenced by the contraction programme is the Hamr I Mine (DH-I), which was mothballed between 1993 and 1995. After the Czech Government decree No. 244/1995 liquidation of the mine started after May 1, 1995, only backfilling is being performed and underground mine should be completely liquidated by 2001.

At present, the production area of ISL covers 6.5 sq. kilometres with about 7,000 technological wells. The diluted sulphuric acid solution was used as lixiviant. A total of 330 million cubic metres of leaching solutions were circulated in the area of ISL in the period between 1967 and 1997. Additionally, 4.3 million t of sulphuric acid, 0.3 million t of nitric acid, 0.1 million t of ammonium and 0.03 million t of hydrofluoric acid were injected underground for the uranium production. A total of 15,000 t of uranium were produced during this period.

The main problem with this production method was the spreading of the leaching solutions out of the production area. An overbalance of 190 million cubic metres between the amount of lixiviant injected than produced in the proximity of the deep mine has affected the underground water covering an area of 28 sq. km.

The development of the ISL plant stopped after the Czech Government decree in 1991 and production from it was carried out at the minimum technological level after 1992. A decision about the future of ISL will be made in accordance to the Czech Government decree No. 170/1996 after the evaluation of research and verifying work done between 1992 and 1995. The liquidation of the mine started after April 1, 1996. The first step of remediation works has been implemented since July 1, 1996, with the operation of a station to suppress the technological leaching solutions with a capacity of 2.5 million cubic metres per year. It is based on evaporation and membrane processes.

Liquidation of ISL will be a long-term and expensive. In the process, it will produce uranium in the amount of about 2,000 t between 1996 and 2005.

The approach from the legislation point of view is being changed according to the new legislation as new acts, new regulations and government decrees and their implementation, as well as the newly applied procedures based on formerly existing legislation.

2. GENERAL LEGISLATION BACKGROUND

The Czech Republic originated from the Czech part of former federal Czechoslovakia after its division in January 1, 1993. Its law system is based on continental law systems, which are based on the main source of law as written law.

The law of the highest power (the highest act) is Constitution of the Czech Republic adopted by the Parliament on December 16, 1992. The State power is ensured by three elements:

- legislative power,
- executive power,
- judicial power.

Legislative power is ensured by the Parliament, which has two chambers — the House of Representatives and the Senate. The government, president and state attorney agency have executive power. Judicial power as the third part of the state power and is independent on any other part of state power and consists of law-courts on different levels.

Legal order is created by a complex of all legal norms (rules) in the state. Not all of them have the same position and they are ordered according to their legal power:

- Constitution of the Czech Republic and Constitutional Acts,
- Acts and Act Measures,
- Government Orders, Notices of Ministries and Authorities on their level,
- Public obligatory orders and notices of local regulatory bodies.

Subordinate legal norms may not be in contradiction with norms of upper legal power.

Legal norms are abstract rules, which cannot cover all social relationships and therefore there is a need for their interpretation. The following system of legal norms interpretation is base on the principle, which body gives the interpretation:

- *legal interpretation* – according to present status, there is nobody authorized for legal interpretation of legal norms now,
- *official interpretation* – it is given by the state body for its subordinate bodies and workers, therefore it is sometimes call service obligatory interpretation. It is not general obligatory interpretation,
- *interpretation of legislation applying body (building authority, water management authority etc.)* – it is also a case obligatory interpretation focused at the concrete situation and can never be used generally,
- *Interpretation in decisions and views of Law-courts* – it is only a case obligatory and not a general obligatory interpretation, but it influences legal use a lot.

3. LEGISLATION RELATED TO MINING AND REMEDIAL ACTIVITIES OF URANIUM INDUSTRY

Legislation related to mining and remedial activities has been developed for a long period of time and it has gone through many changes. Many of the changes were associated with changes after 1989.

3.1. General legislation framework related to mining and remedial activities

The following is a list of legislation related to mining and remediation activities in uranium industry in the Czech Republic according to their legal power and date of issue:

- Act No. 20/1966 Coll. on Medical Care and Public Health
- Act No. 138/1973 Coll. on Waters (Water Act)
- Act No. 44/1988 Coll. on Protection and Use of Minerals and Raw Materials (Mining Act)
- Act No. 309/1991 Coll. on Protection of Air Environment against Polluting Agents (Act on Air Environment)

- Act No. 388/1991 Coll. on State Environmental Fund of The Czech Republic
- Act No. 17/1992 Coll. on the Environment
- Act No. 114/1992 Coll. on Protection of the Nature and Landscape
- Act No. 244/1992 Coll. on Evaluation of Impact on the Environment (EIA Process)
- Act No. 18/1997 Coll. on Peaceful Use of Nuclear Energy and Ionising Radiation (Atomic Act)
- Act No. 125/1997 Coll. on Wastes
- Notice of CBU (Czech Bureau of Mines) No. 104/1988 Coll. on Economic Use of Deposits, Announcement and Licensing of Mining Activities
- Notice of CBU (Czech Bureau of Mines) No. 22/1989 Coll. on Safety and Health Protection and Safety of Operation During Mining Activities in the Underground
- Notice of CBU (Czech Bureau of Mines) No. 26/89 Coll. on Safety and Health Protection and Safety of Operation During Mining Activities on the Surface
- Notice of CBU (Czech Bureau of Mines) No. 51/89 Coll. on Safety and Health Protection and Safety of Operation During Processing of Mineral and Raw Materials
- Notice of CBU (Czech Bureau of Mines) No. 99/1992 Coll. on Construction, Operation, Stabilisation and Liquidation of Installation For Waste Deposition in the Underground
- Notice of SUJB (State Office For Nuclear Safety) No. 184/1997 Coll. on Requirements on Radiation Protection
- Order of the Government of the Czech Republic No.171/92 Coll. which Lays Down Parameters of Admissible Level of Water Pollution

This legislation gives a general framework for mining and remedial activities in the Czech Republic. Specific conditions defining the concrete steps in remedial actions were defined in some decrees of the Czech Government.

3.2. Specific legal framework related to mining and remedial activities of uranium industry

Here follows a list of Decree of the Government of the Czech Republic related to remedial activities of uranium industry:

- UV CSSR No. 94/1989 - concept for decrease of losses in uranium mining in CSSR in 1990
- UV CSFR No. 894/1990 - revision of the concept of uranium mining production decrease in CSFR related to needs of Czech nuclear power plants and report on conditions for realisation of uranium production decrease between 1990 and 2000
- UV CR No. 533/1991 - revision of concept for decrease of uranium production related to needs of Czech nuclear power plants in 1992 and following years
- UV CR No. 366/1992 - results of evaluation of uranium chemical mining in the Česká Lipa region, scenario for close-down and remediation of deposit
- UV CR No. 429/1993 - revision of concept of decrease of production and conservation of the Hamr 1 mine
- UV CR No. 244/1995 - realisation of decrease of the uranium ore mining and milling in the Czech Republic
- UV CR No. 170/1996 - lays down liquidation and remediation of the uranium ISL mining in Straz pod Ralskem

- UV CR No. 427/1997 - report on evaluation of the uranium ore mining and milling at the Dolni Rozinka site

3.3. State regulatory bodies and administration involved in mining and remedial activities of uranium industry

Description of the state regulatory bodies and administration related to the uranium sites decommissioning and remediation are given in the following list:

- *Ministry of Industry and Trade* - founder of s.p. DIAMO, it sets tasks upon DIAMO according to the government's decrees, licenses concepts, projects and conditions of realisation and financing
 - *Building office for Uranium Industry* - licenses and permits construction of various buildings and objects performed in the framework of decommissioning and remediation of uranium sites, situated in the frame of the Ministry of Industry and Trade
- *Czech Bureau of Mines* - supervisor for mining activities, independent, officially controlled only by the Prime Minister (responsible Vice Prime Minister)
- *State Office for Nuclear Safety* - supervisor for nuclear energy use and for protection against ionising radiation with its regional offices, independent, officially controlled only by the Prime Minister (responsible Vice Prime Minister)
- *Ministry of Finance* - looking after and modifying the budget approved by the government to the Ministry of Industry and Trade for remediation works
- *Ministry of Environment* - supervisor, administration in the field of the environment with its regional offices
 - *Czech Inspection of Environment* - supervisor in all parts of the environment (air, water, protection of the landscape and forest, waste), requires remediation of negatively influenced areas, implements penalties and sanctions, controlled by Ministry of Environment
 - *Local Offices of Environment* (in the framework of regional and local authorities) - makes final decisions on licensing activities having influence on the environment, methodologically under Regional offices of the Ministry of Environment (groundwater, air) or Ministry of Agriculture (surface water, forests, agricultural land)
- *Ministry of Health* - supervisor in all aspects of possible health influence
 - *Office for Expertise and Managing of Emergency Situations* (former Office for Working Environment Hygiene) - supervisor for hygiene and safety of work, controlled by Ministry of Health

3.4. Remediation project licensing

The system of remediation project preparation, submitting, approval and licensing in the Czech Republic is not so simple as it seems to be. The essential basis for any remedial project is a government decree where the Government sets requests and tasks. DIAMO is the only organisation, which is involved in remediation of the uranium mining and milling sites and is controlled by Ministry of Industry and Trade. The Ministry authorises all projects and its financing.

Financial sources are allocated each year from the state according to the specific documentation called “Actualisation of the Uranium Industry Contraction Programme” which is prepared out annually by DIAMO and submitted to the Ministry for its authorisation. After the approval in the state budget the Ministry of Finance observes its use. This way the remediation programme is checked twice.

In fact, preparation of any remediation programme could be described as follows:

- I analysis and report on the current status in the uranium industry or at the given site, carried out by DIAMO and subsequently via Ministry of Industry and Trade submitted to the Government to make appropriate decision;
- II the Government issues the decree giving tasks related to the remediation of the site to DIAMO via Ministry of Industry and Trade;
- III DIAMO prepared a detailed schedule according to the tasks given by the government’s decree and Ministry specifications;
- IV risk analysis for the site is carried out by an independent company, contracted by DIAMO, or by DIAMO itself;
- V the Technical Plan of Decommissioning (TPofD) is prepared by DIAMO, and submitted to opponents for evaluation, and then to the Ministry of Industry and Trade for authorisation, the TPofD includes also a social programme;
- VI technical design and plans and other documentation are prepared;
- VII Environment Impact Assessment (EIA) is prepared for every single construction or technology, which is planned to be realised in the framework of remediation of the site, in accordance with the Act No. 244/1992 Coll., prevalingly by an independent company;
- VIII supervision is performed by many authorities such as local offices for the environment (under the control of Ministry of Environment), Czech Bureau of Mines and its regional offices etc. during all the phases of remediation project implementation.

The annual financing is ensured in following way:

- I. the Government decided all costs related to remediation of the uranium mining and milling sites will be paid from the state budget;
- II. in the state budget some amount is allocated for that purposes each year;
- III. the financing is authorised on the basis of “Actualisation of the Uranium Industry Contraction Programme”, prepared by DIAMO and approved by the Ministry of Industry and Trade and Ministry of Finance.

4. NEW LEGISLATION AND NEW APPROACH TO EXISTING LEGISLATION AFTER 1989

There have been many changes in the legal system after 1989. This has dealt mainly with changes in ownership and setting new conditions for development of market economy. Therefore the law can be divided into two parts:

- *new legislation* reflecting new conditions and requests of the society and external influence,
- *old legislation* more or less modified to newly originated conditions.

4.1. New legislation after 1989

There have been many parts of legislation which originated on the request of the completely new conditions in the state and of course in the world:

Act No. 309/1991 Coll. on Protection of Air Environment against Polluting Agents (Act on Air Environment)

Act No. 388/1991 Coll. on State Environmental Fund of The Czech Republic

Act No. 17/1992 Coll. on the Environment

Act No. 114/1992 Coll. on Protection of the Nature and Landscape

Act No. 244/1992 Coll. on Evaluation of Impact on the Environment (EIA Process)

This Act deals with assessment of the impact of prepared constructions, their changes and changes in their use, activities, technologies and development concepts and programmes and products on the environment and sets the authorities of the state administration pertaining to environmental impact assessment.

Act No. 18/1997 Coll. on Peaceful Use of Nuclear Energy and Ionising Radiation (Atomic Act)

This act newly covers all the former subordinate legislation and deals with ways of nuclear energy use and ionising radiation and conditions for performance of the associated activities, system of protection of individuals and the environment against the undesirable influence of ionising radiation. It sets duties for intervention to decrease the influence of natural and accidental radiation, special requests to ensure responsibility for damages caused by radiation accidents. It sets conditions for safe radioactive wastes deposition, execution of the state administration and supervision during the use of nuclear energy and during activities leading to irradiation and over nuclear items.

Act No. 125/1997 Coll. on Wastes

Order of the Government of the Czech Republic No.171/92 Coll. which Lays Down Parameters of Admissible Level of Water Pollution.

4.2. New approach after 1989 to legislation existing before 1989

Act No. 138/1973 Coll. on Waters (Water Act)

Surface waters and groundwaters are one of the raw sources, which are an important part of natural environment and serve for covering of economic and other social needs.

There are three types of water defined in article 2 of the Act:

- surface waters,
- groundwaters,
- special waters — other legislation (Mining Act).

This act sets the rules for protection and economic use of raw materials especially during prospection, exploration and exploitation of raw materials deposits, processing associated with their exploitation, safety of operations and environmental protection.

5. CASE EXAMPLE ON “MINE WATERS”

5.1. Definition of terms for “Mine Waters”

As mentioned above, definition of the term “mine waters” is excluded from the Water Act and should be properly defined in the Mining Act. Article 40 of the Act defines “mine waters” as:

... all groundwaters, surface waters and precipitation waters, which penetrated underground or surface mine spaces ...

The term “mine spaces” has not been properly defined in any legislation. It is only mentioned in decision of the Czech Bureau of Mines No. 1820/1989 article 4, paragraph 3 using following words:

... creation of new mine spaces - e.g. by tunnelling or mining.

The term is also mentioned in the norm ON 44 6305 and in the article 242 of the Notice of the Czech Bureau of Mines No. 22/1989.

This is not a “Platonic” discussion, because the Water Act defines payment duty when groundwaters and surface waters are used, the Mining Act sets no payment duty on “mine waters” when used for operational needs. This could spent a big amount of money from the operators budget, because of not properly defined term in legislation.

5.2. Some questions and interpretations of “Mine Waters” in case of In Situ Leaching (ISL)

What are mine spaces?

Are the spaces only in the ISL production and monitoring wells (defined as mine workings) or the space in the productive horizon, where ore is present, or the space in all horizons from the surface, where ISL was licensed?

Are waters in well “mine waters” and surrounding waters are groundwaters? Then we can pump without any limitations, because waters are pumped from the well as “mine waters” although they were groundwaters shortly before pumping started.

How can “mine spaces” be defined horizontally or vertically for ISL?

There could be discussions on this topic for a long period of time. But this case example shows, how complicated and mainly expensive can be the actions when the right definitions and descriptions are not used in the corresponding legislation.

6. CONCLUSIONS

The above mentioned problems are only a part of the problems which grew out not only because of the new legislation, but mainly because of the new approach taken by the administrative agencies for the legislation, which has been in force for a longer period of time. There are some examples in the interpretation of law, where lawyers and the administrative approach to the problem are in higher influence than the approach to reach practical solutions and the use of sanity.

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