

Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, 1991) - the  
'Espoo (EIA) Convention'

Article 3

NOTIFICATION

Table 2 – Stage 1

Notification to an affected Party of a proposed activity under article 3 of the Convention

1. INFORMATION ON THE PROPOSED ACTIVITY

(i) Information on the nature of the proposed activity

**Type of activity proposed** – Production of phosphoric acid and phosphogypsum storage

**Is the proposed activity listed in appendix I to the Convention?** Yes No

**Scope of proposed activity**

(e.g. main activity and any/all peripheral activities requiring assessment) – Phosphogypsum storage

**Scale of proposed activity**

(e.g. size, production capacity) – 460,000 t of phosphogypsum /year

**Description of proposed activity**

(e.g. technology used) Production of phosphoric acid generates large quantities of phosphogypsum as a by-product which have to be put into storage. The phosphogypsum storage will be developed in stages. From the aspect of the occupied surface, exploitation will take place in three phases, actually in 8 stages with regard to occupied volume. The first three stages implies occupation of the entire planned surface and overbuilding to elevation of 18 m, while the following three stages include overbuilding to height of 36 m. The seventh and eighth stage include overbuilding to the final height of 50 m. Within the each stage exploitation will be organized in several cassettes, 2 or 3. The 15 cassettes will be formed. The cassettes are formed in order to establish the operational regime in which: one cassette is operational (it is used for phosphogypsum storage); one cassette serves as a backup (it is prepared for reception of phosphogypsum and from there is dispatched phosphogypsum for the market), while one cassette is out of use (it is drained in order to enable overbuilding or extraction of phosphogypsum for the market).

**Description of purpose of proposed activity**

Phosphogypsum is separated as a by-product during production of phosphoric acid. The quantities of phosphogypsum are 4-5 times higher than quantities of acid produced as a main product. According to its properties phosphogypsum is similar to other industrially produced gypsums, with minor differences in relation to natural gypsum. Its applicability in industry and construction trade is well known. However, the produced quantities of phosphogypsum far exceed quantities which can be sold and, therefore, it is necessary to be put into storage.

**Rationale for proposed activity**

(e.g. socio-economic basis, physical geographic basis) The issue related to the application of phosphogypsum is closely connected to the produced quantities since they exceed quantities which can be applied in industry during the same period. At present, ELIXIR PRAHOVO LTD PRAHOVO utilizes the old phosphogypsum storage, formed almost 50 years ago at the site located around 2.4 km from the factory. Its regulation and upgrading to the currently required legal and technical level (in accordance with internationally recognized standards and the best available technology - BAT for construction of those facilities) is technically complicated and unprofitable. It is important to underline that there is no possibility for a long-term disposal of newly generated quantities of phosphogypsum at the existing storage. Because of that ELIXIR PRAHOVO LTD PRAHOVO has started activity on the establishment of a new storage place at the more favorable location as a long-term solution. The new site is more favorable since it is located closer to the factory.

## Additional information/comments

### (ii) Information on the spatial and temporal boundaries of the proposed activity

#### Location

Prahovo is located in Negotinska Krajina in the northeastern part of Serbia. Industrial and commercial complexes are located in the surrounding and within territory of Prahovo: Elixir Prahovo Ltd Prahovo, Jugopetrol facilities Prahovo, the Prahovo Port, Krajina River Shipping and HPP Djerdap. The company "Elixir Prahovo Industry of Chemical Products Ltd Prahovo" is situated near the bank of the Danube river and the Prahovo Port, in cadastral municipality Prahovo. The area belongs to the Negotin geodetic sheet in eastern Serbia, between 44°0' and 44°20' North latitude and 44°0' and 44°20' East longitude, relative to Greenwich. The Prahovo village is located 1 km on the west. The Danube flows in a west-east direction, at around 100 m from the company's location and also forms the state border with the Republic of Romania.

#### Description of the location

(e.g. physical-geographic characteristics, socio-economic characteristics) The chemical complex in Prahovo occupies around 135 ha, i.e. 95 parcels, of which 13 is partially occupied, while the remaining number is fully occupied. The largest part of the area is occupied by the industrial complex Elixir Prahovo Ltd. Prahovo, which is located at the Cadastral parcel No. 2300. The remaining occupied parcels are for the purpose of accessory facilities of the complex ELIXIR PRAHOVO LTD. PRAHOVO. Morphologically, the terrain is plain with elevation differences of up to 20 m. The highest elevations in the wider area of the industrial complex ELIXIR PRAHOVO LTD. PRAHOVO are located in the village of Prahovo (64 masl). The lowest elevation of the analyzed terrain is located on the bank of the Danube river (34 masl). The lowest elevation of the phosphogypsum storage place will be the elevation of the lower level of disposal site, which is planned at +46 m. From the aspect of regional geology, Prahovo is located within a wide valley called "Negotinska Krajina", which represents the part of the so-called area Carpatho-Balkanica. The company ELIXIR PRAHOVO LTD. PRAHOVO was built on the Quaternary sediments of the river terrace of Pleistocene age, formed under impact of the Danube river. The Quaternary sediments represent the most important hydrogeological unit in this area, of which is formed the wide river terrace between the Danube river and the Deli Jovan mountain. The Quaternary cover consists of river terrace sediments (tl) and lacustrine sediments of Pliocene age. Prahovo is an industrial settlement of a compact type. It occupies the area of 1,957 ha. According to the inventory of 2011, the number of residents was 1,197, i.e. 577 men and 619 women. The total number of households is 434, while the average number of residents per household is 2.76. In Prahovo mainly live Serbs (93.29%), while the minority includes Vlachs, Romanians, Montenegrins, Gypsies and Croats. The average age of residents is 47.7. It is evident that during the period 1961-2011 the trend of decreasing population was permanently presented. The local population is mainly employed in the processing, traffic, forest and agricultural industries. The employment rate reached significantly higher levels in the 1970s and 1980s comparing to the employment figures at present. It is consequence of social changes and transition process in the Republic of Serbia as well as economic crisis both on regional as well as on global level.

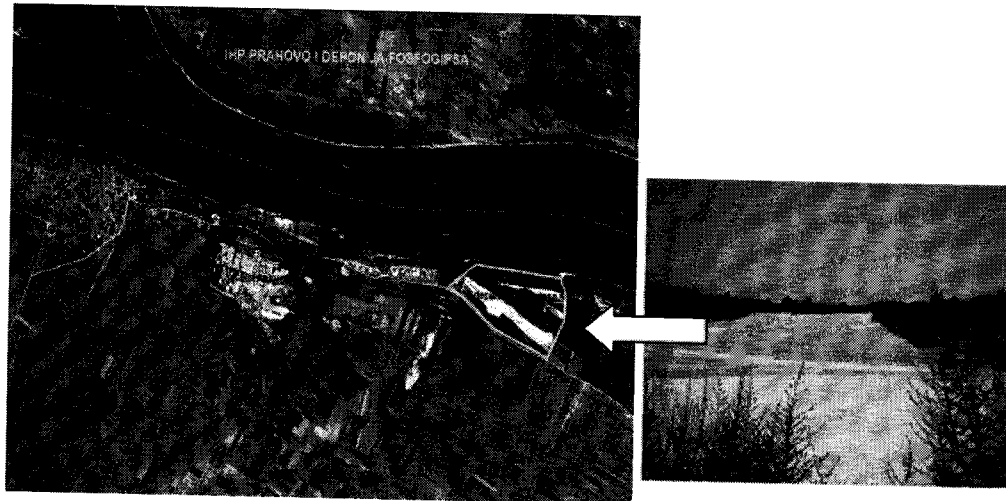
#### Rationale for location of proposed activity

(e.g. socio-economic basis, physical-geographic basis) At present, ELIXIR GROUP LTD. PRAHOVO utilizes the old phosphogypsum storage place, formed almost 50 years ago at the site located around 2.4 km from the factory. The old storage is formed on the terrace above the Danube river and occupies around 54 hectares. The level of the hydrotechnical regulation of the area corresponds to standards applied in 1960s. Its regulation and upgrading to the currently required legal and technical level is complicated and unprofitable. Because of that ELIXIR GROUP LTD. PRAHOVO has started activity on the establishment of a new storage at the more favorable location. The new location is more favorable since it is, in one hand, closer to the factory, providing lesser transport costs and easier organization of production and, in the other hand, the distance from the Danube river is greater, providing safer operational conditions, and, consequently, possible negative effects on the river are reduced.

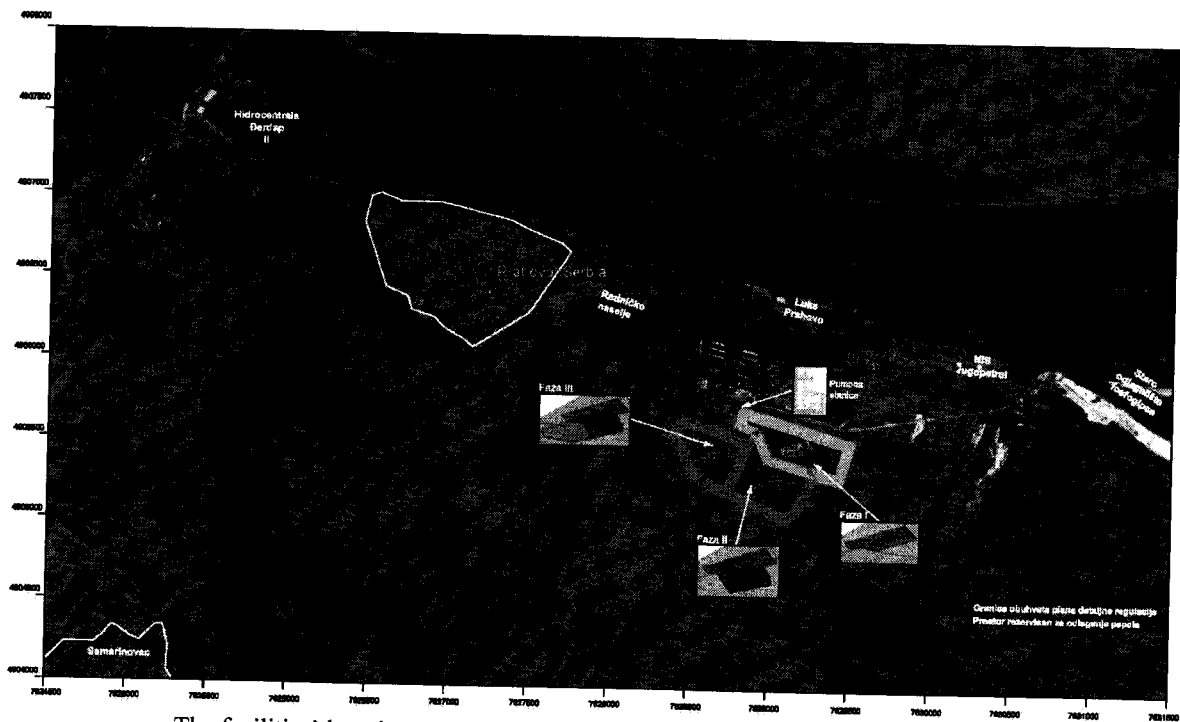
#### Time frame for proposed activity

(e.g. start and duration of construction and operation) Phase overbuilding of the phosphogypsum storage provides a certain accumulation space in each stage. The formation and utilization dynamics is developed for the most disadvantageous scenario when all the quantities of phosphogypsum has to be stored since phosphogypsum cannot be sold on the market. While the stages last from 1.6 to 5.4 years, in the occupied area can be developed the storage in which can be stored the entire quantity of phosphogypsum, without sale or increase of capacity for the period of 24-29 years.

## Maps and other pictorial documents connected with the information on the proposed activity



The location of the old phosphogypsum storage



The facilities' locations with stage development of the phosphogypsum storage

### Additional information/comments

#### (iii) Information on expected environmental impacts and proposed mitigation measures

##### Scope of assessment

(e.g. consideration of: cumulative impacts, evaluation of alternatives, sustainable development issues, impact of peripheral activities) - The Environmental Impact Assessment Study of the Phosphogypsum Storage Project – cumulative impacts.

##### Expected environmental impacts of proposed activity

(e.g. types, locations, magnitudes) - Environmental impacts assessment of the project takes into consideration expected environmental effects based on implementation of the Best Available Technics (BAT) in the project

design phase and the Best Management Practices (BMP) which are applied during construction and operation of the new phosphogypsum storage. The environmental effects are classified in the following way: physical surrounding – soil (physiography, geology and soil), water (surface and underground resources), air (climate, air quality and noise); natural environment – aqueous and earth habitats; socio-economic environment – the existing and planned utilization of land and resources and economic activities related to it. It can be concluded based on the analysis of distribution of suspended particles PM10 emitted from the technological process of phosphogypsum storage in the complex of Elixir Prahovo Ltd. Prahovo that immissions of suspended particles, in the area of the nearest receptors (residential buildings in the village of Prahovo), will not exceed prescribed limits of  $50 \mu\text{g}/\text{m}^3$ . It is a reliable estimate that the noise and vibration connected with activities on phosphogypsum storage will not have impact on the nearest residential buildings in the village of Prahovo. It has also been estimated that the future phosphogypsum storage will not have impacts on the groundwaters in the Elixir Prahovo complex. The concentrations of the deposition particles generated with activities on the phosphogypsum storage will not exceed limit values in the area of residential buildings in the village of Prahovo. From the aspect of phosphogypsum storage, and based on the estimate of the width of the vulnerability zone and the analysis of vulnerability, it can be concluded that in a case of potential accident, it is only realistic to expect minor level of accident. The consequences of accident would be, first of all, limited to the part of facility in which storage is performed. It means that potential accident would not have any direct consequences for the entire complex. Accordingly to the aforementioned, it is not expected any significant environmental impact caused by the activities of phosphogypsum storage or by existence of the storage in Elixir Prahovo Ltd. Prahovo.

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#### **Inputs**

(e.g. raw material, power sources) – Planned annual electricity consumption is 643,680 kWh, what for the phosphogypsum annual storage capacity of 460,000 t provides a normative of 1.40 kWh/t of stored phosphogypsum.

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#### **Outputs**

(e.g. amounts and types of: emissions into the atmosphere, discharges into the water system, solid waste) – It has been planned the annual phosphogypsum production of 460,000 t. In the continuous operation  $240 \text{ m}^3/\text{h}$  of technological water will be delivered to the storage place, of which  $190 \text{ m}^3/\text{h}$  will be returned to the factory. The remaining  $50 \text{ m}^3/\text{h}$  remains in the storage as chemically bound water or pore water. The objective is to remove the entire quantity of technological water delivered to the storage, i.e.  $240 \text{ m}^3/\text{h}$ . As for wastewaters, it should be noted that the designed technology of phosphogypsum storage guarantees its absence. The expected emissions of suspended particles in air at the storage location and its closer and further surrounding will not exceed values which are defined for the quality of ambient air.

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#### **Transboundary impacts**

(e.g. types, locations, magnitudes) – Based on expected environmental impacts of proposed activity transboundary impacts are not expected.

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#### **Proposed mitigation measures**

(e.g. if known, mitigation measures to prevent, eliminate, minimize, compensate for environmental effects) - The project provides air protection in several steps: The storage location has selected both in accordance to the “wind rose” of the project site and in a way to minimize the impact of potential dust dispersion from the storage; Formation of powerful “wind-protection” “greenbelt” is planned around the storage, which width will be from 25 m up to over 50 m, which consists of suitable species of trees; The initial peripheral embankment will be made from coarse-grained and properly rolled material to prevent dust regardless of the intensity and wind direction. For water protection the following measures are undertaken: Selected the site is near the factory, i.e. there are no surface water courses in the area; The bottom and internal slopes of the storage will be hydro insulated with geomembrane (liner) made of high-density polyethylene (HDPE); Closed cycle of industrial water will prevent formation of waste water in the way that the entire water from the storage, drainage water as well as water from the settling pond are collected in the specially designed pumping station and delivered to the phosphoric acid factory for reuse; The peripheral protection canals are constructed around the storage in order to prevent entrance of water from the surrounding into the storage and its mixing with waters from the storage. The preventive environmental protection measures include: The control of noise level within the chemical complex and phosphogypsum storage and optionally at surrounding residential buildings; The reduction of noise of individual plants and machines; Application of the acoustic protection by

means of physical barriers and fences if required (formation of the aforementioned greenbelt for dust protection of surrounding air and soil will greatly influence the environment quality from the aspect of noise).

**Additional information/comments**

**(iv) Proponent/developer**

Name, address, telephone and fax numbers – Name: ELIXIR PRAHOVO INDUSTRY OF CHEMICAL PRODUCTS LTD. PRAHOVO (Director: Strahinja Golubović), Address: Radujevački put bb, 19330 Prahovo, Srbija, Phone: +381 19 543 991, Fax: +381 19 542 885, e-mail: office@elixirprahovo.rs.

**(v) EIA documentation**

Is the EIA documentation (e.g. EIA report or EIS) included in the notification?      Yes   No   Partially

If the answer to the above is no or partially, description of additional documentation to be forwarded and (approximate) date(s) when documentation will be available

Additional information/comments

**2. POINTS OF CONTACT**

**(i) Points of contact for the possible affected Party or Parties**

Authority responsible for coordinating activities relating to the EIA (refer to decision I/3, appendix)  
- Name, address, telephone and fax numbers

List of affected Parties to which notification is being sent

**(ii) Points of contact for the Party of origin**

Authority responsible for coordinating activities relating to the EIA (refer to decision I/3, appendix)  
- Name, address, telephone and fax numbers

Decision-making authority if different than authority responsible for coordinating activities relating to the EIA

- Name, address, telephone and fax numbers

**3. INFORMATION ON THE EIA PROCESS IN THE COUNTRY WHERE THE PROPOSED ACTIVITY IS LOCATED**

**(i) Information on the EIA process that will be applied to the proposed activity**

Time schedule

Opportunities for the affected Party or Parties to be involved in the EIA process

Opportunities for the affected Party or Parties to review and comment on the notification and the EIA documentation

Nature and timing of the possible decision

Process for approval of the proposed activity

Additional information/comments

#### **4. INFORMATION ON THE PUBLIC PARTICIPATION PROCESS IN THE COUNTRY OF ORIGIN**

Public participation procedures

Expected start and duration of public consultation

Additional information/comments

#### **5. DEADLINE FOR RESPONSE**

Date