

ANALYSIS OF THE SUBJECT FACILITY IN THE CONTEXT OF LEGISLATION ON CHEMICAL ACCIDENT PREVENTION – SO-CALLED SEVESO FACILITIES

In accordance with the provisions of the Law on Environmental Protection (“Official Gazette of the RS”, no. 135/2004, 36/2009, 36/2009 – other law, 72/2009 – other law, 43/2011 – Constitutional Court decision, 14/2016, 76/2018, 95/2018 – other law, 95/2018 – other law, and 94/2024 – other law), as well as the Rulebook on the List of Hazardous Substances and Their Quantities and the Criteria for Determining the Type of Documents to Be Prepared by Operators of Seveso Installations or Complexes (“Official Gazette of the RS”, no. 41/2010, 51/2015 and 50/2018), and the recently adopted Law on the Control of Major Accident Hazards Involving Dangerous Substances (“Official Gazette of the RS”, no. 94/2024), which also applies to sites involving thermal treatment of waste and related storage activities that include hazardous substances (Article 3), as well as in accordance with the amendments to the Rulebook on Categories, Testing and Classification of Waste (“Official Gazette of the RS”, no. 56/2010, 93/2019, 39/2021 and 65/2024), the operator, Elixir Craft LLC Šabac – Company for Mechanical, Electrical and Civil Engineering Works, carried out an analysis of the types and quantities of hazardous substances that may be present within the planned Waste-to-Energy Complex to be constructed in Prahovo, on cadastral parcels no. 1420/1, 1420/4, 1491/1, 1541/1, 1541/2, 5824/1, 6513/1, 6513/2, Cadastral Municipality Prahovo. The analysis established the status of the waste-to-energy facility in the context of protection against major chemical accidents.

Pursuant to the Law on Environmental Protection (“Official Gazette of the Republic of Serbia”, no. 135/2004, 36/2009, 36/2009 – other law, 72/2009 – other law, 43/2011 – Constitutional Court decision, 14/2016, 76/2018, 95/2018 – other law, and 94/2024 – other law), Article 58 states: “The operator of a Seveso installation or a complex in which activities involving the presence or potential presence of one or more hazardous substances in equal or greater quantities than those prescribed are carried out, is obliged to submit a Notification or to prepare a Major Accident Prevention Policy, a Safety Report, and an Accident Protection Plan, depending on the quantities of hazardous substances involved in those activities. The operator must also undertake measures to prevent chemical accidents and to limit their impact on human life, health, and the environment, as defined in those documents.”

According to the Rulebook on the List of Hazardous Substances and Their Quantities and the Criteria for Determining the Type of Document to Be Prepared by the Operator of a Seveso Installation or Complex (“Official Gazette of the RS”, no. 41/2010, 51/2015, and 50/2018), it is prescribed that:

- The quantities of hazardous substances on the basis of which the obligations of a Seveso operator are determined refer to the maximum amounts that are or may be present at any time in the Seveso installation or complex.
- When a hazardous substance is stored in multiple locations within the Seveso installation or complex, the individual quantities of that hazardous substance shall be summed. This total represents the baseline amount on which the type of document to be prepared by the operator of the Seveso installation or complex is determined.
- A hazardous substance that is present in the Seveso installation or complex in quantities equal to or less than 2% of the corresponding threshold quantity listed in the Annex to this Rulebook shall be disregarded in the calculation of the maximum quantity of hazardous substances that are or may be present—provided that its

location within the installation or complex is such that it cannot initiate a major accident anywhere in the Seveso installation or complex.

- Substances and mixtures (i.e. hazardous materials) shall be classified in accordance with the Law on Chemicals ("Official Gazette of the RS", no. 36/09, 88/10, 92/11, 93/12, and 25/15) and regulations adopted pursuant to that law.
- Substances and mixtures (i.e. hazardous materials) not subject to regulations on classification, packaging and labelling of chemicals, including waste, but which are or may be present in the Seveso installation or complex and which, under the conditions prevailing in the installation or complex, have or may have equivalent properties in terms of accident potential, shall be provisionally classified in the most similar hazard category or designated hazardous substance specified in this Rulebook.

Within the chemical industry complex in Prahovo, as part of the Energy and Environmental Island, the construction of the Eco Energy Complex is planned. This complex will consist of a waste-to-energy facility for non-recyclable types of waste and an associated landfill for non-hazardous waste (solidified residues).

Thermal energy generated from the energy recovery of non-recyclable hazardous and non-hazardous waste will be used for the evaporation of phosphoric acid in the processing units of the Elixir Prahovo complex, which is the largest consumer of thermal energy within the existing chemical industry complex in Prahovo.

Given the types of activities to be carried out within the complex (i.e., thermal treatment of non-recyclable hazardous and non-hazardous liquid, solid, and sludge waste with a capacity of up to 100,000 tonnes per year, and landfilling of solidified residues in a non-hazardous waste landfill with an average volume of 8,964 m³/year), the Project Developer conducted an analysis and identification of all hazardous substances that will be present within the waste-to-energy complex, taking into account the maximum potential quantities of hazardous substances that may be present at any given time.

Based on the identification of the types and quantities of hazardous substances, it has been determined that the site will include hazardous substances (hazardous waste) classified under Table I – LIST OF HAZARDOUS SUBSTANCES AND THEIR THRESHOLD QUANTITIES and Table II – LIST OF CATEGORIES OF HAZARDOUS SUBSTANCES AND THEIR THRESHOLD QUANTITIES of the Rulebook on the List of Hazardous Substances and Their Quantities and the Criteria for Determining the Type of Documents to Be Prepared by Operators of Seveso Installations or Complexes.

These substances will be present in quantities exceeding those listed in Column 2, and therefore the subject facility has been identified as a "UPPER-TIER SEVESO INSTALLATION."

A list of Seveso substances that will be stored and used at the project site is presented in Tables 1 and 2 below.

Table 1. Tabular Overview of Hazardous Substances within the Eco Energy Complex in Prahovo, in Accordance with Table I of the Rulebook on the List of Hazardous Substances and Their Quantities and the Criteria for Determining the Type of Document to Be Prepared by the Operator of a Seveso Installation or Complex ("Official Gazette of the RS", no. 41/2010, 51/2015 and 50/2018)

No	Name of Hazardous Substance*	CAS Number	Maximum Quantity at the Facility [t]**	Threshold Quantities Prescribed by Rulebook [t]	
				Column 1	Column 2
11	Nickel compounds in inhalable powder form: nickel monoxide, nickel dioxide, nickel sulfide, trinickel disulfide, dinickel trioxide	-	37	-	1
33	The following carcinogens or mixtures containing the following carcinogens in concentrations above 5% by mass: 4-Aminobiphenyl and/or its salts, Benzotrichloride, Benzidine and/or salts, Bis(chloromethyl) ether, Chloromethyl methyl ether, 1,2-Dibromoethane, Diethyl sulfate, Dimethyl sulfate, Dimethylcarbamoyl chloride, 1,2-Dibromo-3-chloropropane, 1,2-Dimethylhydrazine, Dimethylnitrosamine, Hexamethylphosphoramide, Hydrazine, 2-Naphthylamine and/or salts, 4-Nitrobiphenyl and 1,3-Propane sultone	-	261	0,5	2
34	Petroleum products and alternative fuels: a) gasolines and primary gasolines; b) kerosenes (including jet fuels); c) gas oils (including diesel fuels, home heating oils and gas oil blends); d) heavy fuel oils; e) alternative fuels used for the same purposes and with similar flammability and environmental hazard properties as products listed under a) to d)***	-	57	2.500	25.000
40	3-(2-Ethylhexyloxy)propylamine	5397-31-9	178	50	200

45	Tetrahydro-3,5-dimethyl-1,3,5-thiadiazin-2-thione (dazomet) (see Note 9)	533-74-4	261	100	200
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* Hazardous waste that may be present at the installation or complex and that, under the conditions prevailing in the Seveso installation or complex, may exhibit the same properties in terms of accident potential, and which is therefore provisionally classified as the named hazardous substance listed.

** The quantities of hazardous substances on the basis of which the operator's obligations are determined refer to the maximum quantities that are or may be present at any given time within the Seveso installation or complex. For the subject facility, based on the pre-treatment line capacity, thermal treatment plant capacity, and storage capacities, an overview is provided of the expected maximum quantities of hazardous waste that may be present at the complex at any given moment.

*** At the subject location, **only waste with the characteristics of combustible liquids may be stored and treated**, in accordance with the Rulebook on Technical Standards for Fire and Explosion Safety of Installations and Facilities for Flammable and Combustible Liquids, and for the Storage and Transfer of Flammable and Combustible Liquids ("Official Gazette of RS", no. 114/2017 and 85/2021), which cannot be classified in Category 3 of flammable liquids. Furthermore, the project explicitly states that **the subject facility may not accept hazardous waste classified as "flammable liquid waste"** bearing the HP3 hazard code, in accordance with the Rulebook on Categories, Testing and Classification of Waste ("Official Gazette of RS", no. 56/2010, 93/2019, 39/2021, and 65/2024).

Table 2. Tabular Overview of Hazardous Substances within the Eco Energy Complex in Prahovo, in Accordance with Table II of the Rulebook on the List of Hazardous Substances and Their Quantities and the Criteria for Determining the Type of Document to Be Prepared by the Operator of a Seveso Installation or Complex ("Official Gazette of the RS", no. 41/2010, 51/2015 and 50/2018)

No	Name of Hazardous Substance	Classification and Hazard Statement (H-codes)*	Category of Hazardous Substance**	Threshold Quantities [t]		Maximum Quantity at the Waste-to-Energy Facility in Prahovo [t]
				Column 1	Column 2	
1.	Hazardous waste	HP 2 "Oxidizing"	"P8" Oxidizing liquids and solids	50	200	522
2.		<i>Oksidirajuće tečnosti, kategorije 1, H271</i>	<i>Oxidizing liquids, Categories 1, 2, and 3, or</i>			
3.		<i>Oxidizing liquids, Category 1, H271</i>	<i>Oxidizing solids and mixtures, Categories 1, 2,</i>			
4.		<i>Oxidizing solids and</i>				

		<i>mixtures, Category 1, H271</i> <i>Oxidizing liquids, Category 2 or 3, H272</i> <i>Oxidizing solids or mixtures, Category 2 and 3, H272</i>	<i>and 3</i>			
5.		HP 5 “Specific target organ toxicity / Aspiration hazard” <i>STOT – Single exposure, Category 1, H370</i>	H3 „Specific target organ toxicity – single exposure“ <i>STOT – Single exposure, Category 1</i>	50	200	413
6.		HP 6 “Acute toxicity” <i>Acute toxicity, Category 1, all routes of exposure, H300, H310, and H330</i>	H1 "Acute toxicity“ <i>Category 1, all routes of exposure"</i>	5	20	413
7.		HP 6 “Acute toxicity” <i>Acute toxicity, Category 2, all routes of exposure, H300, H310</i> <i>Acute toxicity, Category 3, inhalation, H330</i>	H2 „Acute toxicity“ <i>Category 2, all routes of exposure - Category 3, inhalation</i>	50	200	413
8.		HP 14 “Ecotoxic” <i>Aquatic environment – Acute Category 1</i>	E1 „Hazardous to the aquatic environment“ <i>Acute Category 1, or Chronic Category 1</i>	100	200	5.193

		<i>Aquatic environment – Chronic Category 1</i>				
9.		HP 14 “Ecotoxic” <i>Aquatic environment – Chronic Category 2</i>	E2 “Hazardous to the aquatic environment” <i>Chronic Category 2</i>	200	500	5.193

* Rulebook on Waste Categories, Testing and Classification (“Official Gazette of RS”, no. 56/2010, 93/2019, 39/2021, and 65/2024), Annex 5. H-LIST – List of Hazardous Waste Properties

** Rulebook on the List of Hazardous Substances and Their Quantities and the Criteria for Determining the Type of Document to Be Prepared by the Operator of a Seveso Installation or Complex (“Official Gazette of RS”, no. 41/2010, 51/2015, and 50/2018), LIST OF HAZARDOUS SUBSTANCES AND THEIR THRESHOLD QUANTITIES and LIST OF CATEGORIES OF HAZARDOUS SUBSTANCES AND THEIR THRESHOLD QUANTITIES, Table II: List of Categories of Hazardous Substances and Their Threshold Quantities

CONCLUSION:

With regard to the obligations related to accident risk management, as the operator of an UPPER-TIER SEVESO INSTALLATION, the Project Developer is required, in accordance with the Law on Environmental Protection (“Official Gazette of RS”, no. 135/2004, 36/2009, 36/2009 – other law, 72/2009 – other law, 43/2011 – Constitutional Court decision, 14/2016, 76/2018, 95/2018 – other law, and 94/2024 – other law) / the Law on the Control of Major Accident Hazards Involving Dangerous Substances (“Official Gazette of RS”, no. 94/2024))¹ and the relevant by-laws, to prepare a Safety Report and an Internal Emergency Response Plan, and to obtain the approval of the competent authority for both documents.

¹ This law shall enter into force on the eighth day following its publication in the "Official Gazette of the Republic of Serbia", and shall apply upon the expiration of one year from the date of its entry into force, except for the provisions of this law relating to the obligations of the Republic of Serbia towards the European Union, which shall apply as of the date of accession of the Republic of Serbia to the European Union (Article 56).