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Impact of peat extraction from the peatlands of upper Pripyat basin on the environment

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ABSTRACT

Introduction. One of the alternative fuel and energy sources that is economically attractive and available at the regional level is peat extraction and peat briquette production. This direction of development of the mining industry is especially relevant in regions rich in peat deposits which include Sumy, Chernihiv, Kyiv, Zhytomyr, Volyn, Rivne regions. The Volyn region is one of the regions rich in peat deposits that can be used to meet the economic needs of the population.

The objective of the work is the assessment and territorial distribution of natural reserve funds within the Pripyat River basin in Volyn.

Methods. The research used a complex and systematic approach, as well as mathematical, cartographic and comparative descriptive methods.

Results. There are 4 promising peat deposits in the region which are located in large peat bogs of the upper reaches of the Pripyat River basin, namely Stobykhiv, Koza-Berezyna, Velyke Bagno and Velyke Boloto. One of the newest peat deposits which is being exploited in the Volyn region in accordance with the specified environmental conditions for the planned activity listed in the conclusions of the environmental impact assessment is the Koza-Berezyna peatland. The deposit includes four areas, the Sadok tract (area of 108 ha), the Dolyna tract (146.1 ha), the Robittya tract (129.8 ha), the Kiliyev tract (170.8 ha). Extraction of raw peat as the material for the production of peat briquettes at the Koza-Berezyna deposit uses an industrial surface milling method. It is planned to rehabilitate the land plots disturbed by peat mining and return them to their natural wetland state. Most of the carting channels will be filled with peat from adjacent areas, the existing network of melioration channels will be abandoned by the time of extraction. A sanitary protection zone (SPZ) is established for the period of operation of the peat deposit, the standardized size for the Koza-Berezyna deposit being 100 m. During peat extraction, the pollution of the surface layer of atmospheric air at the SPZ boundary does not exceed hygienic standards. The quality of atmospheric air within the enterprise influence corresponds to the maximum permissible content of pollutants at which there is no negative impact on human health and the state of the environment.

Conclusions. The project contains measures to reduce the impact on the environment: implementation of control over the volume and composition of pollutants emitted into the atmosphere and the levels of physical impact; development of special measures for the protection of atmospheric air in case of man-made and natural emergency situations.

Keywords*: peat deposit, organic fuels, pollutant concentration, peat, sanitary protection zone.*

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Introduction. The problem of energy stability is one of the key tasks in Ukraine, due to the challenges of today, and the reasons are the expected depletion of the reserves of organic fuels, imperfection and low

efficiency of technologies for their use, harmful impact on the environment, as well as the consequences of military operations. Every day, great attention is paid to energy independence and stability to avoid such emergency situations in the utility sector as the loss of heat and blackouts in the winter season. One of the alternative fuel and energy sources that is economically attractive and available at the regional level is peat extraction and peat briquette production. Since peat, like brown coal, has a low caloric value, it can be used only as a local fuel, which can partially solve the problem of providing fuel for small solid-fuel boiler houses that can autonomously heat residential buildings and social institutions of small settlements, mainly in rural areas, in winter, thereby reducing the load on the country's power grid. This direction of development of the mining industry is especially relevant in regions rich in peat deposits, which include Sumy, Chernihiv, Kyiv, Zhytomyr, Volyn, Rivne regions [1, 20].

Borrowing the experience of European countries and creating appropriate conditions for investment activity in the peat industry, the Polissia region which is rich in this local industry could solve the problem of heat supply by partially replacing gas with peat. In addition, it is used in agriculture for the manufacture of organic fertilizers, peat insulation boards, as organic fertilizer itself. Peat is also used in the chemical industry to produce combustible gases, tar, coke, ethyl alcohol, artificial wax, and many other needs [3, 4].

Volyn region belongs to the regions rich in peat deposits that can be used to meet the economic needs of the population. There are 4 promising peat deposits in the region which are located in large peat bogs, Stobykhiv, Koza-Berezyna, Velyke Bagno and Velyke Boloto. Additionally, the territories of these peat bogs border or include nature reserve fund (NRF) objects. For instance, the Koza-Berezyna peat bog borders the Rivne nature reserve, the Velyke Bagno peat bog includes the reserves "Berezovo-Vilkhovy" and "Graddivsky", the Velyke Boloto peat bog includes the reserves "Sofiyanivskyi rezevat", "Dubova", "Svitly". Therefore, the extraction of peat in these massifs requires an environmental impact assessment (EIA) procedure to prevent negative impact and preserve the NRF objects [2,5,15, 20, 21].

One of the newest peat deposits which is being exploited in the Volyn region in accordance with the specified environmental conditions for the planned activity listed in the EIA conclusions is the Dolyna tract of the Koza-Berezyna peatland.

An alternative source of fuel and energy that is economically attractive and available at the regional level is peat extraction and peat briquette production [2]. The state and prospects for the development of the peat mining industry require detailed and in-depth study. The study of the state of peat marshlands of Ukraine was covered by a number of scientists, e.g. G. B. Marushevsky, I. S. Zharuk [4], R. S. Truskavetsky [22]. The development of the concept of balanced development of bogs and peatlands of Ukraine, as well as the ecological certification of bogs, peatlands and drained lands of Ukraine, is discussed by Konishchuk V. V. [12, 13, 14, 15,16, 17, 18, 23, 24] and Bondar A. I. [1].

The objective of the work is the assessment and territorial distribution of NRF within the Pripyat River basin in Volyn.

Research methods and raw data. The research process used instrumental, calculation, generalization, systematization, comparative-analytical, descriptive, cartographic methods.

The concentration of pollutants in the surface layer of atmospheric air was calculated at points on the boundary of the regulatory sanitary protection zone (SPZ), taking the intersection of the regulatory SPZ with the coordinate grid as the calculation point.

The grid step is determined depending on the SPZ size (with regulatory SPZ=100 m, the grid step is taken as 50 m). The dimensions of the calculation site are 2000×2000 m, the grid step is 50×50 m. The pollutant dispersion was calculated at the maximum emission capacity taking into account the production technology (under the condition of simultaneous operation of all sources) with the simultaneous possibility of operation of quarry mechanisms and vehicles for transporting peat (within the deposit).

The emissions of pollutants and greenhouse gases into the air from internal combustion engines of vehicles was calculated according to the «Methodology for calculating emissions of pollutants and greenhouse gases into the air from vehicles» [10, 11].

Research results. The Volyn part of the Koza-Berezyna peat deposit is located within the Manevychi district of the Volyn region (since 2021, the Kamin-Kashyrskyi district). The deposit was named and localized during a detailed exploration of the peat deposit by the Kyiv Geological Exploration Expedition of the Kyivgeology Trust in 1968-1969. It covered the territory of the Volodymyrets district of the Rivne region and the Manevychi district of the Volyn region. The district territory has significant peat reserves estimated at 51.3 million tons, including the total reserves of the Volyn part of the Koza-Berezyna deposit in the amount of 1.432 million tons (40% relative humidity).

The objectives of the planned activity are the development of peat reserves, specified by the State Committee of Ukraine for Land Use and Mineral Resources (No. 3767 of December 16, 2016) as a separate object of subsoil use within the reserves of category C1 for the extraction of peat suitable for briquette production, compost preparation and as peat soil.

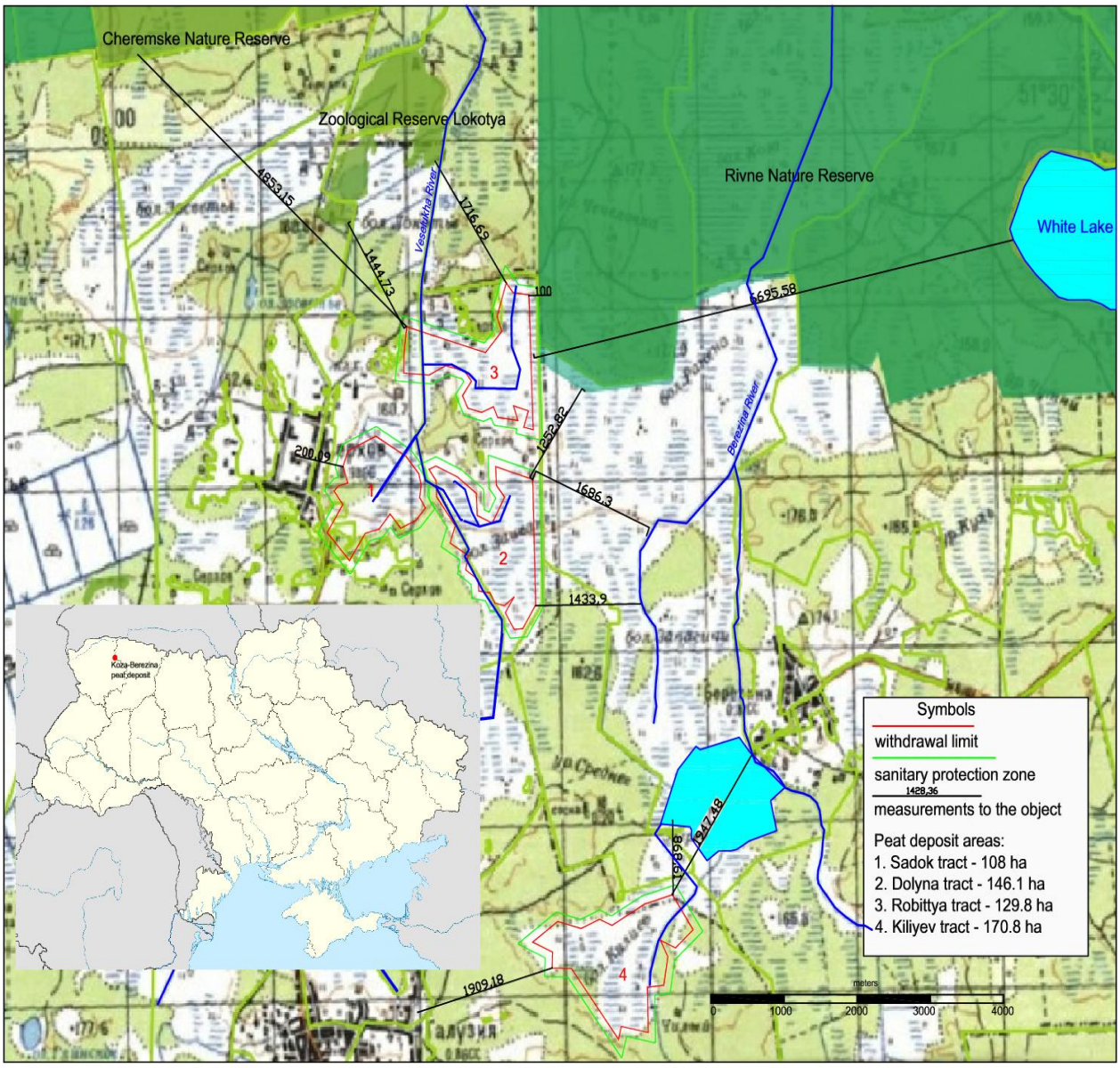

Fig. 1. Map of the Koza-Berezyna peat deposit in the Volyn region

The deposit includes four areas, the Sadok tract with an area of 108 ha, the Dolyna tract (146.1 ha), the Robittya tract (129.8 ha), the Kiliyev tract (170.8 ha).

Mandated by the Conclusions on the environmental impact assessment of the planned activities ("Peat extraction at the Koza-Berezyna deposit, Manevychi district, Volyn region", No. 21/01-20208276495/1 of 29.11.2021), the planned activities at the Koza-Berezyna deposit will implement preparatory, extraction and reclamation work [6, 25].

Preparation of the deposit for extraction operations, further exploitation and completion of extraction will involve the following types of work: swamp preparation; drainage of the deposit; extraction; reclamation.

To organize peat extraction, first of all, drainage canals were cut and the existing main canal was cleaned, to ensure effective drainage from work areas during precipitation in the spring-summer and autumn periods, to ensure the regulatory level of drainage of peat deposits and maneuverability of all types of equipment that will be used in preparing the peat deposit for operation, peat extraction, drying, storing, and shipping to the peat plant.

The field uses a milling method of extraction which is the most common but also the most sensitive to changes in weather conditions. The peat is loosened to a depth of up to 2 cm by a tractor with installed attachments, a milling drum or a knife mill. The mills remove a thin layer turning it into crumbs. The peat loosened in this way dries in the sun. During drying, the peat is turned over 1 to 3 times using an agitator which is also installed on the tractor. After the milled peat reaches the required moisture, it is collected in rolls on carts. Rolled peat is less able to absorb moisture and therefore remains dry. Milled

peat is collected in field stacks after drying until the moisture content of the milled peat reaches 60%. Harvesting of rolls without any dry peat or wet chips is achieved by adjusting the position of the scraper working wall relative to the field surface and the bucket elevator of the harvesting machine. Milled peat can be harvested at any time of the day, but peat that has a tendency to self-ignite is harvested in the evening and at night.

To reduce wetting of peat, the surface of the stacks should be flat without depressions. The angle of inclination of the side and end slopes should vary within 40-42%. The cross-section, as a rule, should be triangular with a stack height of up to 7 m, or trapezoidal with a top width of no more than 2 m for higher stacks. The length of each stack on the working sites is usually 75-80 m. Peat is stacked at the edge of the length of the working area which corresponds to the distance between the shaft channels and is equal to 500 m. The 500 m distance of the length of the peat production area consists of the length of the passage of the harvesting machine (450 m) and two stacking strips (25×2) = 50 m. According to the annual peat extraction program, the storage period of peat in stacks is up to 6 months.

Milling, stirring, rolling and harvesting of peat form the so-called "harvesting cycle". A new process of milling the surface of the peat bed begins immediately after harvesting. Milled peat can be dried only in dry sunny weather, thus its extraction is limited to the warm season.

Extraction of peat as a raw material for the production of peat briquettes at the Koza-Berezyna deposit will utilize industrial surface milling method. The extraction of milled peat in the amount of 80.0–100.0 thousand tons per year requires the following equipment: MTF-14 milling drums (2 pcs), MTF-22 agitators (3 pcs), an MTF-33AS rake (1 pc), MTF-43A peat harvesting machines (3 pcs), an MTF-71A stacking machine (1 pc).

Peat extraction is associated with increased fire risk. Organizational and technical measures to ensure fire safety during peat extraction must meet the requirements of the “Fire Safety Rules for Peat Industry Enterprises” and “Fire Safety Rules in Ukraine”. The following fire prevention measures are planned to ensure fire safety in peat extraction fields: organization of a fire protection service; purchase of fire-fighting equipment and supplies; arrangement of security measures; provision of water supplies for fire extinguishing.

The project includes the reclamation of land plots disturbed by peat mining returning them to their natural wetland state. Most of the carting channels will be filled with peat from adjacent areas, and the existing network of melioration channels will be abandoned by the time of extraction.

A sanitary protection zone (SPZ) is established for the period of operation of the peat deposit. For an industrial enterprise that is a source of atmospheric pollution, SPZ is established in accordance with the current sanitary standards under the "State Sanitary Rules for Planning and Development of Settlements" approved by the order of the Ministry of Health of Ukraine No. 173 of 19.06.96 (SSR No. 173). According to the SSR No. 173, Appendix 4, the standard SPZ size for the Koza-Berezyna deposit is 100 m as an “enterprise for peat extraction by milling method” which corresponds to Class 4 of the sanitary classification of enterprises. The adequacy of the SPZ size was checked by calculating surface concentrations of pollutants [7, 8, 9].

The standard size of the sanitary protection zone was met. There are no residential buildings, preschool activities, schools, medical preventive institutions, sports facilities, and protection zones of water supply sources in the SPZ.

The expected concentrations of pollutants in the affected area do not exceed hygienic standards. The quality of atmospheric air within the affected area satisfies the maximum permissible content (MPC) of pollutants at which there is no negative impact on human health and the state of the environment.

The deposit extraction technology involves processes that lead to emissions of pollutants into the atmosphere. Sources of pollutant emissions into the atmosphere are peat drying, peat loading, and the operation of internal combustion engines of mining equipment. A characteristic feature of technological burst emissions is the lack of a time pattern and time interval for performing work. The operation of technological equipment and, as a result, the release of pollutants is according to production needs.

Sources of pollutant emissions into the atmosphere on the territory of the peat deposit are:

Source No. 1 – stirring and rolling milling chips, resulting in the emission of substances in the form of solid suspended particles;

Source No. 2 – collecting and stacking peat – the emission of solid suspended particles;

Source No. 3 – loading peat into dump trucks – the emission of solid suspended particles;

Source No. 4 – motor transportation of peat within the deposit – the emission of solid suspended particles;

Source No. 5 – operation of internal combustion engines of mechanisms and vehicles – the emission of nitrogen dioxide, carbon monoxide, sulfur dioxide, nitrogen oxide, soot, volatile organics, benzopyrene, methane, carbon dioxide.

The pollutant dispersion was calculated in the option where all emission sources operate simultaneously. Mean annual data on the operating mode and parameters of technological equipment are required

and presented in Table 1.

The criteria for assessing the impact on the environment are the emission capacity per unit of time (g/s) and gross emission (t/yr), as well as the standard of atmospheric air quality which reflects the maximum permissible content (MPC) of pollutants in atmospheric air at which there is no negative impact on human health and the state of the environment.

Table 1

Input data for calculating pollutant emissions

Factor	Unit of measurement	Extraction operations
Work type		Seasonal
Workdays per year	day	129
Work shifts per day	shift	1
Shift duration	hour	12
Workload: yearly	‘000 ton	80.0
per shift (average)	ton	319.3
per hour (max)	ton	26.6
Total expended fuel and materials		
Diesel fuel	ton/year	149,2

Emissions of pollutants are calculated in accordance with the accepted techniques for calculating pollutants from unorganized sources of atmospheric pollution [1, 6, 25]. All coefficients are taken according to the tabulated data of the technique in relation to the specified characteristics of the technological process. Production capacity and operating hours of emission sources are in accordance with the technological task. The initial data for calculating the volume of pollutant emissions from motor vehicles are characteristics of the transport fleet, fuel consumption, and specific emissions of pollutants per unit of fuel used.

Calculations of pollutant concentrations in atmospheric air employed "EOL+" v. 5.3.8 software. Software algorithms implement the OND-86 "Methodology for calculating concentrations in atmospheric air of hazardous substances from enterprise emissions". The search of unfavorable wind speeds is done by the program automatically based on input speeds [19, 25].

Based on the analysis of pollution maps in the calculation nodes, atmospheric pollution is listed in Table 5 (in parts of MPC). The results showed that, taking into account background pollution, for the substances that required calculations (these were defined as having dispersion over 0.05 MPC), the surface concentrations of pollutants emitted at the Koza-Berezyna deposit do not exceed regulatory requirements.

Thus, the contribution of the projected activity to the pollution of the surface layer of atmospheric air at the SPZ borders (100 meter size) does not exceed hygienic standards. Ambient air quality corresponds to MPC of pollutants with negligible adverse effect to health and environment. The effects on the air environment is considered acceptable.

The Koza-Berezina peat deposit is located in the basin of the Veselukha River, a right tributary of the Pripyat River, and the main canal of the Soyne peat massif, the bed of which is canalized with a minor draining role of the river. The watershed between the Veselukha River basin and the Berezina River basin is not clearly defined. The water intake has a high percentage of wetlands (over 30%). The river valley is practically not pronounced, flat, and imperceptibly merges with the adjacent plain area. The main canal of the Soyne peat massif serves as a water intake at the peat deposit. The length of the main canal is 9 km, of which 5.7 km is the canalized bed of the Veselukha River. The parameters of the main canal allow water to be taken from sections of the Koza-Berezina peat deposit without deepening. Drainage waters, in terms of chemical composition and other characteristics, are identical to the waters of the Veselukha River and main canals. The decrease in the groundwater level due to the drainage network of canals in the development area and the adjacent territories is at depth of 1.5 to 2.0 m, to enable mechanized surface-layer mining operations, and the water level in the canals is controlled by sluice gates. Since at a distance of 500 m from the development boundary the groundwater depth is 0.4–0.6 m, the effect of drainage on villages further off is virtually absent. Pollution of groundwater as a result of peat extraction is not expected. Surface and groundwater are not suitable for drinking and domestic needs.

The impact on certain adjacent lands of the forest fund is assessed as positive because forest stands grow in conditions of waterlogging and flooding.

No objects of the nature reserve fund fall within the boundaries of peat areas that are involved in industrial development and thua do not come under negative impact as a result of raw peat extraction. The closest to the territory of the peat deposit are the Cheremsky Nature Reserve, the Rivne Nature Reserve and the Lokottia General Zoological Reserve (Fig. 1). The Rivne Nature Reserve borders the sanitary protection zone of the Robittya site, the length of

Table 2

Emission parameters of air-polluting sources

Source No	Emission source	Work hours	Source parameters		Map coordinates of source		Characteristics of dust and gas mixture at the outlet			Pollutant code	Pollutant	Specific emission	
			Height, m	Diameter, m	Point / Start of line / Center of symmetry, planar		Flow, m^3/s	Velocity, m/s	Temperature, C °			g /s	t/year
					X1	Y1							
1	Stirring, rolling of peat	1548	5	0.5	1700	2000	0.30	1.5	24.7	2902	Suspended solid particles	0.0078	0.348
2	Peat collecting and stacking	1548	5	0.5	1750	1750	0.30	1.5	24.7	2902	Suspended solid particles	0.0156	0.174
3	Peat loading	1548	5	0.5	1550	1550	0.30	1.5	24.7	2902	Suspended solid particles	0.0124	0.218
4	Peat transportation	1548	5	0.5	1520	1500	0.30	1.5	24.7	2902	Suspended solid particles	0.0024	0.085
5	Internal combustion engines	1548	5	0.5	1500	1500	0.30	1.5	24.7	328	Soot	0.0278	0.691
										301	Nitrogen oxides (as nitrogen dioxide [NO + NO_2])	0.23	5,636
										304	Nitrogen(I) oxide (N_2O)	$9 \cdot 10^{-5}$	0.022
										330	Sulfur dioxide	0.0311	0.772
										337	Carbon monoxide	0.26	6,498
										11812	Carbon dioxide	22.6633	563,271
										2754	Non-methane volatile organic compounds (NMVOC)	0.059	1,465
										410	Methane	0.0018	0.045
										703	Benzopyrene	0.0002	0.0054

Table 3

Pollutants released into the atmosphere during extraction operations

Pollutant		MPC, mg/m^3	Hazard class	Specific emission, t/yr
------- 2902	Suspended solid particles (microparticles and fibers)	0,5		0,825

Table 4

Pollutants released into the atmosphere from internal combustion engines (mobile sources)

Pollutant		MPC, mg/m^3	Hazard class	Specific emission, t/yr
------- 328	Soot	0,15		0,691
------- 301	Nitrogen oxides (as nitrogen dioxide [NO + NO_2])	0,02	3	5,636
------- 304	Nitrogen(I) oxide (N_2O)	0,4	3	0,022
------- 330	Sulfur dioxide	0,5	3	0,772
------- 337	Carbon monoxide	5	4	6,498
------- 11812	Carbon dioxide	0	0	563,271
------- 2754	NMVOC	1	4	1,465
------- 410	Methane	50	0	0,045
------- 703	Benzopyrene	0,0001	1	0,0054

Table 5

Pollutant concentration within the affected area, taking into account background pollution

No	Pollutant	MPC, mg/m^3	Background pollution, in parts of MPC C_b	Pollution at the SPZ boundary			
				in parts of MPC (max)		mg/m^3 (max)	
				C_p	$C_p + C_b$	C_p	$C_p + C_b$
1	Solid suspended particles	0.5	0.4	0.014	0.414	0.007	0.207
2	Nitrogen dioxide	0.2	0.4	0.40	0.80	0.08	0.16
3	Soot	0.15	0.4	0.065	0.465	0.00975	0.06975
4	Benzopyrene	0.0001	0.4	0.50	0.90	0.00005	0.00009

the common border is 1 km. The Cheremsky Nature Reserve is located 6 km northwest of the peat areas (Sadok and Robittya tracts) of the Volyn part of the Koza-Berezyna peat deposit. The catchment area of the Veselukha River near the peat raw material development site No. 3 is in the immediate vicinity of the Zaserkhivya swamp wetlands, about 18,728 hectares, which constitute ~1.5-2.0% of the area of wetlands of the Biloozersky massif of the nature reserve, and a forest with an area of 50,771 hectares (pine-alder-birch forest). If the groundwater level in the adjacent territories of the reserve decreases by 1 to 2 meters, some transformation and decrease in the state of forests and swamp vegetation may occur; however, this will not lead to changes in the typological and formational structure of vegetation, since the groundwater level decrease of 1 meter is within seasonal fluctuations, and their regime will be close to the current one.

The preparatory and extraction operations of the peat deposit generate such urban and industrial waste as solid household waste; used batteries; used technical lubricants; used oil filter; cleaning materials dirty with petroleum products; septic tank sludge.

Table 6

Wastes generated during the implementation of the planned activity

Waste type	Annual volume, t	Waste management
Waste formed in transportation operations, not otherwise specified or combined	0.0011	Stored on site for further transfer to specialized disposal company
Batteries and other accumulators	0.6514	Stored on site for further transfer to specialized disposal company
Oils and lubricants, motor or transmission or otherwise	1.4050	Stored on site for further transfer to specialized disposal company
Wiping materials	0.2580	Stored on site for further transfer to specialized disposal company
Urban waste, mixed, including binned garbage	0.7296	Transferred to the municipal solid waste landfill (village of Serkhiv)
Septic tank sludge	0.9520	Transferred for disposal to the utility company (village of Prylisne)

Collection, transportation, utilization, and burial of household waste is performed by the local utility company according to the contract. Accumulation and utilization of worn out work clothes will take place outside the work site and field site, with planned write-offs by the company order.

Solid household waste is collected separately. Specifically, technological scheme 1 uses two containers. One container, blue with the inscription "Recycling", is intended for collecting wastes suitable for re-use and recycling, except organic components. Another container, gray, is intended for collecting the rest of mixed waste, including the organic component of household waste.

To minimize negative impact on the surrounding environment during the temporary storage of solid waste before processing and disposal, specially equipped fenced places are provided.

Also, measures to reduce anthropogenic impact on the environment are provided, namely:

– controlling the volume and composition of pollutants emitted into the atmosphere and levels of physical impact;

– installing protective grilles on tubular crossings of cart channels to retain large particles (more than 25×25 mm) of peat to prevent them from entering inter-cart channels;

– periodic flushing of pipes of cart channel crossings, cleaning the bottom of the cart channel network and drainage channels from silt, and constructing a silt trap in the idle part of the main channel to settle the smallest particles of milled peat;

– ensuring the integrated use of raw material resources. Ensuring full collection, proper storage and transfer of waste for re-use/disposal;

– surveying and mining technical control over the development of the deposit;

– measures are planned to rehabilitate the soil and the excavated areas in general to reduce the damage from the quarry operation, and it is prohibited to disturb or pollute the surrounding area;

– all mechanisms will be maintained in good condition, so that their noise and vibration characteristics comply with the technical specifications;

– after the completion of the field development, the territory will be rehabilitated.

Conclusions and prospects for further research. There are 4 promising peat deposits in the region, which are located in large peat bogs of the upper reaches of the Pripyat River basin, Stobykhivske, Koza-Berezyna, Velyke Bagno and Velyke Boloto. One of the newest peat deposits exploited in the

Volyn region is Koza-Berezyna. Peat as a raw material for the production of peat briquettes is extracted by industrial surface milling method. It is planned to rehabilitate land plots disturbed by peat mining and return them to their natural state of wetlands. At the same time, most of the carting channels will be filled with peat from adjacent areas, the existing network of meliorative channels will be abandoned by the time of extraction. A set of measures aimed at restoring and recultivating the peat mining area is also planned, which include monitoring both the volume and composition of pollutants emitted into the atmospheric air or surface waters and levels of physical impact, as well as recultivation of the territory, soils, and mined areas as a whole, including prohibiting disturbance or contamination of the adjacent territory.

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Вплив видобування торфосировини з торфовищ верхів'я басейну річки Прип'ять на довкілля

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Одним із альтернативних джерел палива та енергії економічно привабливим і доступним на регіональному рівні є видобуток торфу та виробництво торфобрикету. Цей напрямок розвитку видобувної промисловості особливо актуальним є у регіонах багатих покладами торфу до яких належать: Сумська, Чернігівська, Київська, Житомирська, Волинська, Рівненська області. Волинська область належить до регіонів багатих на поклади торфу які можуть бути використані для задоволення господарських потреб населення. На території області є 4 перспективних родовища торфу які розташовані у великих торфоболотних масивах верхів'я басейну річки Прип'ять : Стобихівське, Коза-Березина, Велике Багно та Велике Болото. Одним із найновіших родовищ торфу, яке експлуатується у Волинській області, відповідно до визначених екологічних умов провадження планованої діяльності, що зазначені у висновках ОВД, є видобуток торфосировини торфовища Коза-Березина. До складу родовища входять чотири ділянки: урочище Садок – площею 108 га; урочище Долина – площею 146,1 га; урочище Робіття – площею 129,8га; урочище Кілієв – площею 170,8 га. Видобування торфу, як сировини для виробництва торф'яних брикетів, на родовищі «Коза-Березина» здійснюєтьсь промисловим поверхнево-фрезерним способом. Передбачено рекультивацію порушених торфорозробками земельних ділянок та повернення їх у природний стан – водно-болотні угіддя. При цьому більшість картових каналів буде засипана торфом з прилеглих ділянок, існуюча мережа меліоративних каналів до часу видобування буде залишена. На час експлуатації родовища торфу встановлюється санітарно-захисна зона (СЗЗ), нормативний розмір санітарно-захисної зони для родовища «Коза-Березина», становить 100 м. Під час видобування торфу забруднення приземного шару атмосферного повітря на межі нормативної санітарно-захисної зони, розміром 100 метрів, не перевищує гігієнічних нормативів. Якість атмосферного повітря в межах впливу підприємства відповідає граничнодопустимому вмісту забруднюючих речовин, при якому відсутній негативний вплив на здоров'я людини та на стан навколишнього природного середовища.

Ключові слова*: торфове родовище, органічні види палива, концентрації забруднюючих речовин, торф, санітарно-захисна зона.*

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