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At by the use as a fuel natural gas the electro-initiation of process of synthesis of radicals was carried out at tension of 10 kV and higher. There was the considerable economy of fuel (without addition of additives ~15 %, with addition of additives ~20 %).

Conclusion. The conclusion is that using of electrocatalysis with burning fuels leads to a significant increase in the amount of heat: the coal to 10-15%, wood to 14-25%, gas 15-20%.

This delivers a significant reduction in environmental impact. So with coal combustion NO_x emissions reduction is achieved by 80%, CO by 52%. Using wood -reduces NO_x by 49%, CO by 33%. The degree of burnout of coal increases by 17,5%. The consumption of energy to undertake the process does not exceed 5% of the excess heat.

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CHARACTER OF CHANGES IN UNDERGROUND WATER CONDITIONS ON THE AREA ADJACENT TO TAILING PONDS OF MINING AND CONCENTRATION WORKS

As is known, 1 kt of crude ore mined by the open pit method produces 200 t of marketable iron ore products, while the rest 800 t are mining and concentration wastes. Concentration waste materials (tailings) include liquid phase materials (slurry) of aqueous suspension remains of fragmented rock mass from which an iron ore component is extracted by the magnetic-flotation method. Slurry is fed to specific alluviation maps (beaches) of tailing ponds that can be either of plane or multilayered types.

In Kryvyi Rih iron ore region, there are eight tailing ponds of five operating mining and concentration works. They are mostly

concentrated in the southern part of Kryvyi Rih where four tailing ponds are located on the territory of 3-5 thou. ha. Two of them belong to the mining and concentration works (GZK) of the PJSC *ArcelorMittal Kryvyi Rih* (PJSC *AMKR*) (*Myroliubivka* and *Obiednane*, Map IV) and the rest - to the PJSC *Pivdenny GZK* (*Voikove* and *Obiednane*, Map I). The basic technical parameters of these facilities are the following

Tailing pond	Year of	Height, m construction	Area,	Capacity,ham m^3
Myroliubivka	1957	145	479	107
Obiednane Map IV	1971	180	320	235
Voikove	1955	75	250	157
Obiednane Map I	1971	135	230	185

Being gigantic hydro-structures on the surface, tailing ponds are factors greatly affecting hydro-geological structures. The research conducted deals with assessment of remote consequences for underground waters of the Cenozoic horizon of long-term functioning tailing ponds of mining and concentration works of the southern GZK group.

Before building tailing ponds, the aquifer in the Quaternary System sediments was widespread only in alluvial deposits on the left bank of the Inhulets and sporadically - in loess soil loams on watershed sections. After constructing the GZK tailing ponds, in 1961, the flooding expanded along the plane [1] heading to the Inhulets river and adjacent ravines, absolute levels of underground waters varying from 95 to 30 m. During the following decade, there were some changes in level modes caused by introduction of Maps I and VI of Obiednane tailing pond that made water levels raise abruptly. In 1975-1980, the subterranean back water zone of the horizon reached 1.5 km.

In 1984, the total area of water-table uprising on the territory adjacent to the tailing ponds of the PJSC *Pivdenny GZK* and the PJSC *AMKR* made up about 50 nkm^2 with the 3 m-level of underground waters that still remains the same.

Five years after constructing the tailing ponds, salination of the Quaternary horizon averaged 6.5 g/dm^3. In 1975, it increased up to 8.8g/dm^3, while in 1990, it reached 11.5 g/dm^3. Right now, there are

formed stable leakages of water with 7 g/dm^3 salination along the left-hand bank of the Inhulets river 1.7 km off Voikove tailing pond [2]. Anomalous content of manganese (up to 0.209 mg/dm^3), oil products (up to 4.65 mg/dm^3) iron ore, aluminum and bromine is detected in the underground waters [3].

The aquifer of Neogene sediments with 10.5-40 m deep underground waters is characterized by plane expansion and before construction of the tailing ponds, its salination was up to 1.93 g/dm^3. It was widely used to meet household needs in drinkable water through wells and springs.

Construction of Voikove and Myroliubivske tailing ponds in 1960-1963 increased the level of Neogene horizon waters by 30m. After putting into operation Obiednane of Map I and I tailing ponds in Hrushevata Ravine, the water supply area shifted to the watershed *Hrushevata Ravine-Shyroka Ravine* and contaminated underground waters headed north-west towards the left-hand bank of the Inhulets. Technogenic factors and filtration losses from tailing ponds eventually activated the geological processes in flooding areas. This resulted in a landslide formed on the left bank of the Inhulets (Novoselivka) in 1989 and covered 22 farmsteads. In 1996-1998, there were new landslides resulted in erosion and bank destruction as well as marshy lands and quick sands. Hydrogeological surface damages are being observed and there are fresh cracks, subsidences, landslides, solution sinkholes, etc. [3].

In the 5-year time after constructing the tailing ponds, water salination was 5.6 g/dm^3 and reached 11-14 gr/dm^3 site wide from the tailing ponds to the bank of the Inhulets. There were found admixtures of manganese (up to 18.11 mg/dm^3), oil products (up to 140.9 mg/dm^3) and zinc (up to 90.56 mg/dm^3). As a result, all drinkable water wells were destroyed.

The data provided indicate that construction and exploitation of facilities accumulating liquid wastes of iron ore concentration are extremely dangerous technological solutions causing irrevocable destruction of the hydrosphere on great territories located far from such sites.

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WATER QUALITY OF URDARI AND SOUTH PESTEANA PIT LAKES

Pit lakes result from the natural and/or artificial flooding of the remaining gaps of the former open-pit mining perimeters. Urdari and South Pesteana pit lakes were formed by natural flooding of the former lignite open-pits located in the mining perimeters identically named.