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## **The Development of Technogenic Deposits Formed in the Process of Iron Ore Mining**

Almost 1bln tons of iron are mined in the world annually; more than 700mln tons of steel are smelted. 67% of overburden and 60% of iron ore tailings can be used to produce building materials. Reextraction of iron, chrome, manganese, and vanadium is possible as losses of metals in tailings are 10-25%.

According to prognosis evaluation, the development of technogenic deposits would make it possible to implement 15-20% extension of raw-material base for mining and metallurgical, coal, and mining and chemical branches. Manufacturing of various building materials may involve up to 30% of mined rocks as well as their tailings. However, their actual use is not more than 4%.

Effective application of resources containing iron-bearing sand by “TsGOK” PJSC is demonstrative example of technogenic deposits mining. The operations are performed according to a “Project for the construction of pilot industrial site concerning extra preparation of iron-bearing sand of tailing pond in terms of “TsGOK” developed in 2003 by “Krivbassproject” Institute.

Currently, sites #3 and #4 are mined. They are south-western and western continuation of sites #1 and #2 have already been mined out. Materials of results of geological prospecting concerning the assessment of “TsGOK” tailing pond generalize outcomes of drilling operations as well as testing of 56 auger holes (848.65m), tests of 550 run-of-mine samples (with 6-16kg mass), 16 small (with up to 70kg mass) and two laboratory (with 1-10t mass) technological samples of tails from preparation plant.

The samples have been stored within reservoirs since 1961. Iron-bearing sand is mined with the help of two floating hydraulic excavators of 350-50Jl type. Stale sand is delivered to the plant by means of hydraulic fill pipeline system. Slopes of Malaia Lozovatka and Bolshaia Lozovatka ravines restrict mining depth in the context of bottoms. Area of site #3 within the adopted borders is 62.61 ha taking into consideration central dam disassembling (benchmarks 14÷30).

Iron-bearing sand is mined in amounts of 8 513 thousand tons when average mass fraction is  $Fe_{o6u} = 22.00 \%$ ,  $Fe_{mar} = 7.27 \%$ . Area of site #4 within the adopted borders is 42.70 ha. Iron-bearing sand is mined in the amount of 4 690 thousand tons when average mass fraction is  $Fe_{o6u} = 18.49 \%$ ,  $Fe_{mar} = 5.13 \%$ . After mining process within the sites is over, tails may be repeatedly placed in the reservoirs.