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Analysis of Effect of Mine Heaps of Western Donbass upon the Environment and Human Health

There are 10 coal-mining enterprises within Western Donbass territory. While mining not only valuable mineral resources but also dead rocks are taken to the surface, the latter being piled on special territories creating mine wastes. Mine heaps have specific influence upon local environment and people's life of the region.

First and the main problem is the fact that mine wastes cover huge land areas destroying fertile black soil. According to statistics, average volume of the mined rock of one “DTEK Pavligradugol” mine is 1 mln m³/year. Correspondingly, 10 operating enterprises increase this figure by ten times. The second problem is the fact that mine wastes can become compact and self-ignite contaminating the air with combustion products with their further dispersion in winds direction. Average-sized mine waste emits 14 thousand tons of CO₂, 5 thousand tons of CO, and great amount of dust per year.

Physical and chemical properties of soil of mine wastes surface layers changes in wide range. Surface layer usually weathers or it is washed away with water. However, it contains almost all mineral elements necessary for plant nutrition. Flowing down from mine wastes, water destroys vegetation of on near-by territory as it contains various toxins.

As for human health, mine wastes deteriorate sanitary and hygienic living conditions. Residential area of Western Donbass are close to mine wastes that is why there should be special geological and ecological research to develop environmental protection measures to minimize negative effects. First of all, these are emission prevention, land drainage measures, prevention of atmospheric precipitations into underground water levels, recultivation, and planting. The most efficient measure is to pull down mine heaps and reuse rock mass taking into account its physical and chemical, physical and mechanical, mineralogical and geochemical and other properties.

One of the variants to solve mine waste problem is coal mining with leaving the rock underground. These rocks should be laid into worked-out space. As a result, it is possible to minimize deformations of earth surface and make vast areas clear (without any mine heaps).

It will make possible to solve the problem of rock reuse without general mine coal net cost. There will be no rock mass dressing; costs for ground transport will be reduced; operating conditions of stoping face will improve; ash content of the mined coal will reduce; environmental pressure will decrease. It is necessary to carry out complex research to have overall estimate of filling in Western Donbass mines.