

SYSTEMATIZATION OF DATA ON THE MODERN THREAT OF SLAGHEAPS

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Purpose. Improve the technology of phytoremediation of degraded lands in mining regions.

Methodology. The research was carried out by studying an extensive knowledge base, studying practical application in Ukraine and European countries.

Findings. The dependences of the impact slagheaps on the environment were considered based on the method of their reclamation [1-4]. The environmental hazard of the process of the influx of rock, which is washed away or blown out of the slagheaps into the surrounding territory, is determined by the high content of heavy metals in the rock, especially Ni, Pb, and Cu, with an excess of the MPC of the mobile form by 1.5-2.5, 3.5, respectively -7 and 3.3-5 times [4-7]. The potential annual deflationary removal of rock reaches 157 tons per hectare of slagheap surface. From each hectare of the slagheap surface, 122.5 kg of heavy metals are washed out annually. Changes in the factors of rain erosion – the amount of atmospheric precipitation, their distribution by months of the warm season of the year, the frequency of rains of various heights over the past 60 years in the east of Ukraine. It was concluded that the calculated soil washout increased by 1.4 times. Therefore, afforestation of slagheaps, carried out when they are included in the regional eco-network, preventing the removal of rock from their surface, radically reduces the ecological hazard of the slagheaps, minimizes internal combustion and stabilizes the landscape from possible landslides. The phytoremediation technology in this case will help to controllably extract heavy metals from waste rock [7-10].

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Key words: slagheap, phytoremediation, recultivation, environmental protection

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METHODOLOGY OF RESEARCHING THE PROCESS OF OBTAINING COMPOSITE FUEL FROM COAL PROCESSING WASTE

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Purpose. In solving the problem of developing coal preparation wastes in the production of composite fuels, such as coal sludge and braize, reliable knowledge about various physical and mechanical characteristics of waste is important [1-5], since they are the initial calculated values for equipment design [6-10].

Methodology. To study the process of electrokinetic agglomeration and the choice of optimal parameters, a complex technique is required, including the determination of: physical, mechanical and chemical properties of the initial coal sludge, ways of influencing the production mode of compositions by bringing the state of the initial material to its required parameters (preparation and influence on physical and chemical properties).

Findings. The physical and mechanical characteristics of the studied waste vary in a very wide range; in particular, bulk density – 1150-2350 kg/m³, moisture content – 6-65%, particle size – from dust-like classes +0 mm to large +6 mm, etc. It should be noted that various compositions of coal sludge differ significantly in their physical and mechanical characteristics, depending not only on the composition of the components, but also on moisture content. A wide variety of the investigated slimes and braizes made it possible to create more than 1000 solid fuel compositions.

Electrokinetic agglomeration of coal sludge requires preparation, which, depending on the physical, mechanical and chemical properties of the initial material, includes the following: 1) technical analysis: determination of moisture content, ash content, volatile matter yield, heat of combustion, sintering capacity; 2) research using elemental analysis: determination of the content of carbon and hydrogen, nitrogen, sulphur; 3) possible drying of the initial charge to the required