

## PRELIMINARY ASSESSMENT OF THE CONTENT OF VALUABLE COMPONENTS IN COAL MINE WASTE DUMPS

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**Purpose.** Study of the mineralogical and chemical composition of waste rocks from the Western Donbass coal mines dumps to establish the presence of valuable components and their subsequent industrial development. The present work is a continuation of work [1-3]. This work expands the knowledge about the availability of valuable components in waste dumps for industrial development of their resources in the future [4-12].

**Methodology.** Samples of rocks were taken from a dump of one of the mines in Western Donbass, crushed to a size of -5.0 mm and examined by microscopic and X-ray spectral analysis to determine the mineral and chemical composition.

**Findings.** The presence of value metals Al, Fe, Ti, Sc, Ge, Ga in empty rocks, which may be subject to industrial development, has been established. It is determined that argillites and siltstones are predominant in the mixture of waste rocks – 70-80%, sandstone 10-20, coal 5-10%. The peculiarities of the content of valuable components in the different fractions of waste rocks have been studied. The main directions of use of waste dumps – extraction of valuable components and as a source of valuable raw materials for the construction industry are covered. Emphasis is placed on technological, economic and social aspects of the feasibility of industrial development of waste dumps, as well as the main reasons that currently complicate this process.

This project is a part of a regional grant from the Dnipropetrovsk region for young scientists (2020): “Development of a complex of applied solutions for the rational development of mineral resources from coal mine waste dumps”.

**Key words:** waste dump, coal, rare earth metals, methods of substance analysis

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## PHYTOREMEDIATION TECHNOLOGY FOR COAL DUMPS

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**Purpose.** To study possible phytoremediation techniques to improve the condition of coal dumps.

**Methodology.** To study the physical-and-chemical parameters of soil substrates used for coal dump reclamation in Western Donbas, in particular black soil and red-brown clay; to investigate the Bioconcentration Factors, Translocation Factors and Tolerance Index of indicator plants; to compare the different additions to soil substrate in order to increase the phytostabilization by testing in model laboratory experiments examples of different biosorbents and bioremediants.

**Methods.** Mining is a process, which produce a lot of waste with high concentration of heavy metals and toxic elements [1-4]. These lands have a low pH, low concentration of organic and low vegetation. However, there are many solutions for this problem [5]. It is very important to choose correctly method for decision of