STUDY OF THE COMPOSITION OF MINERAL SALTS WASTE RELEASED DURING THE PRODUCTION PROCESS

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ANNOTATION

Potassium element is important in increasing the productivity of plants. Therefore, compounds of potassium such as KCl, KNO_3 are used as mineral fertilizers in agriculture. Currently, the production process of potassium fertilizers based on the flotation method is developing rapidly in Uzbekistan. The most common problem in the production process today is the accumulation of a large amount of waste. results are shown.

Key words: sylvinite ore, flotation, sludge waste, NaCl, KCl, Dekhonabad potash plant, heavy metal compounds, complex fertilizer, X-ray fluorescence spectrometer

INTRODUCTION.

Currently, the Dehkhanabad potash plant in Uzbekistan separates potassium chloride compound by flotation processing of sylvinite ore. The flotation method cannot obtain a high-quality concentrate with a KCl content of 95-96% from low-grade potash ores. In addition, thin sylvinite fractions do not give effective results. The most effective way to improve the quality of potassium fertilizers is to remove the 0.2 mm class from the flotation feed and send it to gallurgic processing. The use of the gallurgic method of enrichment in many cases allows to significantly increase the efficiency of processing low-grade potash ores. The process of

beneficiation of potassium ore is carried out in the following sequential stages, i.e. preparation, main and auxiliary stages. Preparation stage: dividing, grinding, sifting and dividing into fractions. The main stage includes the stage of separation of ore particles or suspension, in which useful minerals are concentrated. useless ones are separated into waste. Preparation of potassium ores for flotation enrichment at the Dehkhanabad potash plant includes the following stages: medium and fine separation, crushing, scrubbing (sludge dispersion) and de-slurrying. Preparation for galurgic processing of potash ores consists only of dividing into medium and small pieces [1] .

LITERATURE ANALYSIS AND METHODS.

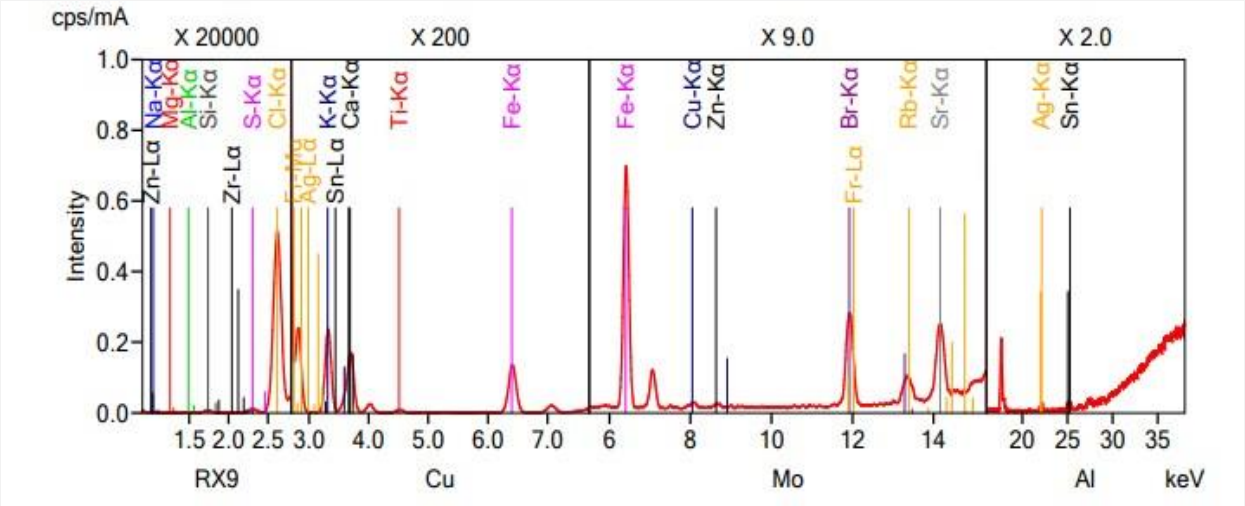
In the process of processing and enrichment of raw materials in the potash industry, large tons of solid halite waste are generated, which are sent to landfills. When 1 ton of KCl is obtained, 3-4 tons of waste are generated. Along with the main component NaCl (up to 90%), they contain KCl, $CaSO_4$, $MgCl_2$, Br and insoluble substances. Salt wastes are accumulated near potash enterprises, which cause soil salinization and mineralization of surface and underground water. allows to increase the level of acquisition [1]. The essence of the proposed technology is to wash halite waste with a saturated solution of sodium chloride. At the same time, potassium chloride in halite waste passes into a saturated solution of sodium chloride and salts sodium chloride, i.e. in a saturated solution, the concentration of potassium chloride increases and sodium chloride precipitates [2]. According to the proposed method, halite residues of the main production are used as raw materials for washing them from potassium chloride, separating water-insoluble residue, organic components, and also for preparing a saturated solution of sodium chloride. Thanks to this technical solution, as a result, a solution saturated with sodium and potassium chloride salts and a salt precipitate consisting mainly of sodium chloride are obtained. can be used in the mining industry. However, the demand in these sectors does not exceed 30-35% of the total amount of waste. The rest is recycled or disposed of according to scientific studies [3].

DISCUSSION

During the production of potassium chloride mineral fertilizer from sylvinite ore by the flotation method of "Dehkhanabad Potash Plant" JSC, sludge waste is separated. According to the project, these wastes are discharged into the sludge collection basin. It is very important to analyze the composition of this waste completely based on modern spectral methods. When the enterprise is working at full capacity, the second-stage sludge collection basin will be filled with sludge waste in 6.5 years. Determination and study of the composition of this waste will lead to the synthesis of new types of substances [2].

RESULTS

Currently, there is 242,375 m³ of sludge waste in the first stage sludge collectionbasin. Due to the fullness of this sludge collection basin, the separated sludge waste is discharged to the second-stage sludge collection basin, and the obtainedsludge waste sample was analyzed by high-efficiency energy dispersive X-ray fluorescence spectrometer and its composition was studied.



Based on the above-mentioned spectrum parameters, the composition of the sludge waste was determined as a result of x-ray spatial analysis using Na-Ka, Mg-Ka, Al-Ka, Si-Ka, S-Ka, Zr-La, Zn-La, Cl-Ka RX9 source. points were determined. Peak points of heavy compounds in the substance were obtained through sources of Cu, Mo, Al.

Table 1

Chemical composition of sludge waste

The formula of a chemical compound	Br	Fr	SiO_2	SO_3	CaO	TiO_2	Fe_2O_3	CuO	ZnO
Quantity (%), death-rate, mortality	0,0018	0,0011	6,98	3,27	1,15	0,0281	0,0772	0,0007	0,0004
The formula of a chemical compound	KCl	NaCl	Al2O3	MgO	SnO2	Ag2O	ZrO2	Rb_2O	SrO
Quantity (%), death-rate, mortality	3,39	57,5	3,54	3,85	0,0011	0,0006	0,0759	0,0006	0,0018

As can be seen in the above table, the high amount of NaCl 57.5% and KCl 3.39% compounds in the sludge waste indicates the importance of converting the sludge waste into sodium and potassium-retaining compounds as a result of processing.

CONCLUSION.

As a result of studying the composition of the muddy sludge using X-ray fluorescence spectrometer, its composition was fully analyzed. shows that it can be turned into a complex mineral fertilizer.

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