PHYSICO-CHEMICAL PROPERTIES AND CONSUMER DIRECTIONS OF UTILISATION OF SEWAGE SLUDGE COMBUSTION ASH

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Abstract. The main problems and prospects of water disposal systems of such a megalopolis as St. Petersburg are considered. Methods for processing sewage sludge to an ecologically safe state as well as the use of sludge combustion ash at the Central Aeration Station in St. Petersburg are proposed. Special attention is paid to the issues of sludge management in the sewage system of domestic wastewater. Modern methods of physico-chemical and chemical analyses were employed to evaluate the composition and physico-mechanical properties of sludge combustion ash in the fluidised bed of the French "Pyrofluid" furnaces. X-ray diffraction, X-ray phase and chemical analyses of the ash from the combustion of sewage sludge were carried out, the results of which allowed us to infer the relationship of elemental and phase compositions of the ash to various silicate materials intended for construction and agriculture. The possibility of using CAS ash for extinguishing and eliminating oil spills was confirmed experimentally in comparison with similar capabilities of marshalite and fine-grained construction sand. A method for preparing dry building mixes based on Portland cement for obtaining low-water demand construction binders is proposed. The conclusions describe the possibility of using sludge combustion ash in agriculture owing to the presence of biogenic elements in its composition.

Keywords: MSW, sewage, sludge, combustion ash, treatment plants..