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PHYSICO-CHEMICAL PROPERTIES AND POSSIBLE APPLICATIONS OF SEWAGE SLUDGE COMBUSTION ASH

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Abstract. The main problems and prospects of water disposal systems of such a megalopolis as Saint 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 (CAS) in Saint 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. The X-ray diffraction, X-ray phase and elemental analyses of the ash from the combustion of sewage sludge were carried out, the results of which allowed 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 ash for extinguishing and eliminating oil spills at the CAS 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.

Keywords: municipal solid waste, sewage, sludge, combustion ash, treatment plant.

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