
ECOLOGICAL ASSESSMENT OF THE WET LIMESTONE DESULPHURISATION TECHNOLOGY FOR COKE OVEN FLUE GASES© O.L. Borysenko¹, O.M. Kasimov²

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The article discusses the tasks and results of developing new approaches to methodological support for comprehensive assessment of the environmental friendliness of systemic natural and man-made objects. A scheme of algorithmic support for comprehensive analysis has been developed to solve environmental safety problems at the level of natural and man-made complexes using MIPS and risk analysis methods. The results of an environmental assessment using the developed method in the analysis of wet limestone desulphurisation technology for coke oven off-gases are presented. It is shown that a complex of MIPS and risk analysis methods allows determining the environmental friendliness of a systemic object as a whole, as well as establishing the danger of factors affecting the environment, assessing the positive effect of possible spontaneous processes of stabilising safety at the system output, and identifying mechanisms for regulating risk situations under possible conditions of destabilisation.

Analysis of the dynamics of natural and man-made objects of the 'state1-process-state2' type allows identifying factors that reduce environmental risk under conditions of man-made stress. Algorithmic support for a comprehensive assessment of the environmental friendliness of a specific industrial and technological complex is proposed, as well as software for thermodynamic calculation of the probability of stabilising processes and determination of opportunities to reduce environmental hazards for environmental objects. Based on the results of MIPS and risk analysis, it has been established that the wet limestone desulphurisation technology for flue gas emissions from coke oven heating systems complies with acceptable environmental standards. Mechanisms for improving the environmental safety of this technology through synergistic effects have been identified.

Keywords: coke ovens, flue gases, desulphurisation, wet limestone technology, MIPS analysis, environmental safety.

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