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DETERMINE THE EFFECTS OF UNUSUAL SITUATIONS

The institutions of the food company for its activity specific is not high-risk object, but the adverse or unusual situations, which should be classified as dangerous, can be created during its functioning. These situations include explosions and fires, which take place in the process of activities of the institution and could affect on the production staff.

To provide the safety of production staff, minimizing the possible effects in the event of adverse or unusual situations, it is necessary to carry out the sustainability assessment of the structures manufacturing objects of the food company. Based on the results is determining the suitability of structure of the building (building) of the food company industry to norms of the flammability and explosive dangerous standards.

The aim of the work is to develop a method for calculating the value of the overpressure, which may be created during the combustion of gas-steam-air mixture in the buildings of the food company.

To assess the stability of structures manufacturing objects of the food company to the effects of negative factors there was making explore using a method that establishes the procedure for calculating the value of the overpressure, which may be created during the combustion of gas-steam-air mixtures in production buildings of above mentioned institutions.

Evaluating of fire and explosion danger of the technological process was determined experimentally and analytically.

During the research is applied method of analysis of the process deviations during the substantiation of the dangers that may arise in case of violation of the technical specifications for manufacturing facilities of the food company; method of failure analysis process equipment of the food company while research the effects of the failure of individual units, systems and devices.

To calculate the values of the explosive fire risk criteria in case the combustion of gas-vapor-air mixture choose the most unfavorable variant of the accident (emergency), when at the building receives the maximum quantity of dangerous substances (mixtures). Number of substances which fall within the buildings and may form explosive and flammable gas-air and steam-air mixtures and their hybrids are defined under the following conditions: – there is estimated accident (emergencies) one of the devices; – the entire amount of the dangerous mixture contained in the unit enters the building; – all amounts of pipeline substance considering the time to disconnect.

The research method of calculating the overpressure, what may be formed during combustion gas mixture was occurred with the following conditions: in a typical building of the food company with normal conditions of working environment, free volume 200 m^3, laid a pipeline with a bore diameter 50 mm, which is transported propane C_3H_8 with maximum consumption $5 \cdot 10^{-3}$ m^3/s, and the maximum pressure 150 kPa.

Calculations were made for cases with pipeline equipped with automatic shut-off system timing eventually 2 s; Automation system failure probability no more than 0.000001 a year and did not provide emergency reservation of items, off time - 120 s; - 300 s with manual disconnection system off time - 300 s.

These calculations are used for determining the stability of structures, scope and degree of destruction of buildings and the number of possible victims. Therefore in the design of new or renovation of old buildings should take into account all possible risks.

In the case of redevelopment of premises, change their functional purpose, technical rearmament must adhere to the fire protection requirements of existing regulations of construction and technological design. Not allowed reducing design limits of fire resistance of structures and deteriorating conditions of evacuation of people.

The proposed method of calculation of the overpressure size, which can be created by the burning of gas-vapor-air mixture in the buildings of of the food company allows determine in advance the consequences of possible adverse or unusual situations and take timely structural and technical measures for preventing or minimizing it.