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Cappadocia, TURKEY**

ABSTRACT BOOK

Edited by

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**STATEMENT OF TASKS OF SCIENTIFIC RESEARCH ON DEVELOPMENT OF
METHODS OF FIRE PREVENTION AND EXPLOSION SAFETY OF SOLID
HOUSEHOLD BUILDING OBJECTS**

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Abstract

The world's most common method of solid waste management (MSW) is disposal in special landfills or dumps. The area of these objects increases every year and approaches the settlements [1]. The incineration process, which takes years, is an integral part of landfill operation. However, the problem of fires is particularly acute. Incineration of solid waste occurs not only on the surface of the landfill but also in the depth of the mass of the accumulated waste. As a result of waste incineration, voids are formed, which are the cause of breakdowns and landslides. The main consequences of the danger include contamination of environmental components due to the additional formation of environmentally hazardous substances (eg, dioxins), a large area of their distribution, the presence of dead, injured, people with impaired living conditions. There is a danger to the service personnel of the facility, fire and rescue unit and special forces.

The objects of solid waste accumulation are a biochemical reactor [2], in which biogas is formed due to anaerobic decomposition of the organic component. The main part of biogas is methane and carbon dioxide [3], which create additional anthropogenic pressure on the environment. The process of decomposition of the organic component of solid waste is uneven with varying intensity. One part of the landfill may be dominated by aerobic decomposition with the release of carbon dioxide, on the other - the intensive release of methane, and there may be "dead zones". Methane is a more dangerous component - a more powerful greenhouse gas. When methane accumulates in the mass of solid waste, explosive and flammable zones occur. In the developed countries of the world, developing countries, there are programs for the utilization of biogas (garbage gas) – gas installations are being introduced [4, 5]. Biogas is used as a fuel for the production of electricity, heat or steam, fuel for vehicles. Some gas projects for biogas utilization involve the use of cogeneration units – combined production of electricity and heat.

The main factors of fire and explosion hazard at these facilities in the presence of biogas collection and utilization systems include: hazardous combustion factors on the waste disposal map; violation of the rules of maintenance and operation of the technological line (exceeding the volume of biogas collection), depressurization and leakage or emissions of biogas through seals, gaskets (violation of the tightness of welds and connecting flanges); damage to the system of starting and stopping the technological process, which can lead to an explosive atmosphere; failures in the system of control of parameters of technological processes; the influence of external natural factors that lead to corrosion of materials, structures, structures, reducing their physical and mechanical parameters (external action of natural forces and man-made systems on equipment); structural and production defects of buildings (errors during exploration and design, poor performance of construction works, low quality of building materials and structures, violations of manufacturing and construction technology); influence of technological processes on building materials (load, high temperatures, vibration, action of oxidants); failure of parts, assemblies, equipment, tanks, pipelines; violation of safety rules

during works and technological processes; errors related to the low level of professional training of employees and specialists, their incompetence.

The purpose of scientific research is to determine the conditions for the formation of the mathematical apparatus of the method of preventing the occurrence of fire and explosion landfills located near settlements. To achieve this goal it is necessary to solve the following tasks: 1. To determine the initial conditions for the existence of a mathematical model of methods for preventing fire and explosion hazards of solid waste disposal facilities. These are conditions of danger. 2. Determine the boundary conditions for the existence of the corresponding mathematical model. These are conditions to prevent the spread of danger.

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