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FIRE SAFETY AT AGRICULTURAL FACILITIES IN RUSSIA: FUNDAMENTALS OF PREVENTIVE MEASURES

Arifullin, Evgeny Zaudyatovich¹, Ovchinnikova, Tatyana Valentinovna²,
Zvyagina, Lilia Nikolaevna³

¹Candidate of Technical Sciences, Associate Professor, Voronezh State Technical University,
84, 20-letiya Oktyabrya Street, Voronezh, Russia, E-mail: arif-vrn@mail.ru

²Candidate of Biological Sciences, Associate Professor, Voronezh State Technical University,
84, 20-letiya Oktyabrya Street, Voronezh, Russia, E-mail: tvo0104@mail.ru

³Candidate of Technical Sciences, Associate Professor, Voronezh State Technical University,
84, 20-letiya Oktyabrya Street, Voronezh, Russia, E-mail: zvyagina.l@list.ru

Abstract

In the conditions of the formation of a market economy, the problems of life safety are becoming one of the most acute. They are associated with injuries and occupational diseases, which in some cases lead to fatal outcomes, while more than half of industrial and agricultural enterprises belong to the class of maximum occupational risk. In this regard, special attention should be paid to the preparation of settlements for extinguishing fires, the development of appropriate operational documents. This article will consider the main factors of the occurrence of fires in rural areas, their classification, the causes of fires, as well as the issues of fire prevention management in rural areas.

Keywords: agriculture, land, safety, fire, country.

I. INTRODUCTION

Reforming the socio-economic life of the Russian society is associated with increasing the efficiency of the domestic economy and the establishment of market relations in all spheres of industrial production. One of the most important sectors of the Russian economy is agro-industrial construction, where the changes are the most difficult - the pace and efficiency of its modernization lag behind the desired ones. This is due, first of all, to the insufficient quality of training of specialists to work in this sector of the agro-industrial complex, a significant decrease in the inflow of young people to work in agriculture. Economics and education today are closely interconnected, and the influence of education on the efficiency of agro-industrial construction is becoming more and more obvious. Much attention in the construction of buildings, structures and other agricultural facilities is paid to the creation of reliable fire safety systems.



The quality of the created fire safety systems depends on the level of training of specialists in this field. To date, the effectiveness of training of fire safety specialists for the agro-industrial complex (AIC) lags behind the requirements of modern industrialized agricultural production, which is confirmed by numerous studies, as well as assessments of managers and specialists in the field of agriculture.

II. METHODOLOGY AND RESULTS

To solve the set tasks and verify the initial assumptions, the following set of research methods was used, mutually verifying and complementing each other:

- analysis and generalization of advanced pedagogical experience, existing programs, textbooks and methodological manuals, archival documents on the research problem;
- study of special literature on the research topic in the field of related branches of scientific knowledge;
- theoretical analysis;
- systematic approach.

Harvesting is one of the most important events for all agricultural enterprises of our country. This period summarizes the results of the entire annual activity of agrarians. The main emphasis, of course, is made on the speed and quality of grain harvesting and, in parallel, fodder preparation. Therefore, ensuring safety during the harvesting campaign is the main task of all agricultural workers.

The main conditions contributing to the occurrence of fires are the absence of the required fire regime, insufficient control by responsible officials, as well as, in some cases, insufficient training of farm workers in fire safety issues. According to statistics, human factor is the most frequent cause of fire. The first reason is careless handling of fire. The second factor that can lead to fire is violation of technical regulations of hay or straw storage. If the process is violated and humidity is higher than normal, the temperature inside the stack or bale can gradually increase, which will eventually lead to spontaneous combustion.

Also causes of fires are - smoking in unauthorized places, failure to perform daily maintenance of machinery, timely cleaning of areas and units, replacement of faulty equipment, carrying out fire works near places where fodder and crops are stored, etc.





In order to avoid losses, the manager should carry out a set of preparatory measures and comply with fire safety requirements. Appoint responsible persons for fire safety training, including harvesting machines and units, organization of fire safety regime. All employees should undergo fire safety training, and such categories as drivers, combine harvesters, tractor drivers, etc. should also undergo training on fire technical minimum.

Rough fodder stacks on the territory should be located on a specially designated area, plowed with a strip not less than 3 meters wide, at a distance of 15 meters from the base of stacks, stacks, haystacks (hereinafter - stacks), and each individual stack should have protective strips at a distance of 5 meters from its base.

Gaps between individual stacks, sheds or stacks shall be at least 20 meters. Stacks, sheds and stacks may be placed in pairs, and the gaps between stacks, sheds and stacks in one pair shall be not less than 6 meters, between adjacent pairs - not less than 30 meters. In the gaps between two pairs of stacks, a strip at least 4 meters wide shall be plowed.

The distance from stacks, sheds and stacks of rough fodder to power lines should be at least 15 meters, to roads - 20 meters, to buildings, structures - at least 50 meters, to the boundaries of the forest area - at least 100 meters. The process of storage of roughage should be accompanied by measurements of temperature and humidity parameters. Rough fodder humidity should be determined using moisture meters with an error of no more than 1 percent at a moisture content of up to 18 percent at the stage of hay stacking. It is not allowed to store, stack, stacks, warehouses coarse fodder with increased humidity. If the moisture content of rough fodder is more than 17 percent, it must be dried. Within 60 days from the moment of laying it is necessary to carry out daily temperature control of stacked roughage with registration of date, time, place of measurement and temperature in a special log. Attention should be paid to equipping agricultural machinery with primary fire extinguishing equipment. Grain harvesters are equipped with two powder fire extinguishers with the mass of fire extinguishing agent not less than 8 kg and fire cloth with the size not less than 2 by 1.5 meters. Tractors and other special equipment with internal combustion engine running on diesel fuel shall be equipped with one powder fire extinguisher with a mass of extinguishing agent not less than 4 kg. Self-propelled agricultural machinery (for harvesting, planting and cultivation of crops, for fertilizer application and so on) shall be equipped with two powder fire extinguishers with a mass of extinguishing agent not less than 4 kg (each) or one powder fire extinguisher with a mass of extinguishing agent not less than 8 kg, fire-fighting cloth with a size not less than 2 by 1.5 meters. Trucks with payload over 1.5 tons shall be equipped with two powder fire extinguishers with the mass of fire extinguishing agent not less than 4 kg (each) or one powder fire extinguisher with the mass of fire extinguishing agent not less than 8 kg.





In places of grain harvesting the duty of fire brigade members, provided with fire rescue or other adapted for fire extinguishing equipment and a tractor equipped with a plow shall be organized. The adapted equipment shall be provided with water, a pump and primary fire extinguishing equipment.

Mechanizers should timely clean beaters, straw stackers, conveyors, pickers, augers, other rotating parts and assemblies of combines and harvesting machines from the coiled straw mass.

It is forbidden to burn stubble, crop residues and build fires in the fields.

Fulfillment of these requirements will protect crops, fodder and human labor from fire.

Scientific and technical progress is the most important feature of the development of agriculture at the present stage, it is associated with the technical re-equipment of all branches of agricultural production. Industrialization is being carried out at a rapid pace, industrial methods are widely introduced in the technology of production of meat, milk and other food products, as well as raw materials for industry. In the main directions of economic and social development, the village is tasked to ensure further growth of livestock production, to strengthen the production base of this industry. In conditions of intensive development of modern livestock breeding on industrial basis, an important task is to create and maintain microclimate in livestock and poultry houses, which provides optimal zoohygienic and sanitary-veterinary conditions for keeping livestock and poultry. Currently, science and practice of advanced specialized farms have data on obtaining high performance in milk and meat production, preservation of livestock and poultry in compliance with the normative parameters of microclimate. If unsatisfactory microclimate is maintained in the premises, then, other things being equal, milk productivity of cows decreases by 10-15%, average daily weight gain - by 7-12%, egg production of chickens - by 25-30%, increases the number of cows, increases the consumption of feed per unit of products, quickly develops pathogenic microbes and spreads infection.

Illumination of livestock buildings depends on a set of many factors: the size and shape of light apertures, their location relative to the working surface, the area and type of glazing, the degree of contamination of glass, reflectivity of the internal surfaces of the premises, as well as climatic conditions of the area of construction, orientation of the building.

A fire alarm system is one component of a fire protection system. Fire codes prescribe a general procedure for the design of fire alarm systems in buildings and structures.

Control of warning and evacuation in the event of fire shall be accomplished by one or a combination of the following methods:

By sound and/or light signals to all areas of the building with permanent or temporary occupancy;

by broadcasting texts on the need to evacuate, evacuation routes, direction of travel and other measures to ensure the safety of people;

broadcasting specially designed texts to prevent panic and other phenomena that make evacuation difficult;

Placing evacuation safety signs along evacuation routes;

Recording evacuation safety signs;

Switching on evacuation lighting;

Remote opening of escape exit doors (e.g. equipped with electromagnetic locks).

Notification and evacuation control systems should be interconnected with the civil defense notification system, the systems should be activated by a command pulse generated by an automatic fire alarm or fire extinguishing system.

The audible notification signals shall be different in tone from those used for other purposes.

Detection and evacuation controls in Category A and B buildings shall be interlocked with the process automation or fire alarm system.



In rooms and buildings where (working, residential, recreational) people with physical disabilities (visually impaired, hearing impaired) are present, evacuation warning and control must take these features into account.

To extinguish a fire, the temperature in the reaction zone must drop to the point where combustion ceases. The absolute limit of this temperature is called the extinction temperature. When extinguishing a fire, extinguishing conditions are created by cooling the combustion zone or substance, releasing reagents from the combustion zone, diluting the reagents, and chemically inhibiting the combustion reaction.



The method of performing actions in a specific sequence to create conditions for stopping combustion is called a fire extinguishing method.

Water as an extinguishing agent can be used alone or mixed with various chemicals. Compared to other agents, water has advantages such as wide availability and low cost, high heat capacity, high transportability, chemical neutrality and non-toxicity. Water should not be used to extinguish live circuits and electrical equipment because the water jet is a conductor and can cause electric shock.

A variety of fire extinguishers are commonly used as the primary fire extinguishing equipment. Chemical foam extinguishers are designed to extinguish flammable and combustible liquids and solids.

Air-foam extinguishers are used under similar circumstances as chemical extinguishers. Unlike chemical foam, air foam is more economical but less durable. Foam extinguishers cannot be used to extinguish energized electrical equipment because the foam contains water. Carbon dioxide extinguishers are used to extinguish flammable and combustible liquids, solids, energized electrical equipment, valuables and materials. The extinguisher must be protected from heat, as the working pressure in the cylinder at 20 ° C is 6 MPa.

Carbon dioxide-bromomethyl extinguishers are used in the same cases as carbon dioxide extinguishers, but have certain advantages. They have a much lower cylinder pressure (0.9 MPa), which allows the use of thin-walled cylinders that weigh less. Powder extinguishers are universal and characterized by a wide range of applications. The extinguisher is activated by pressing a mushroom-shaped button.

The most important stage of agricultural work is harvesting. One of the main tasks is to conduct the harvesting campaign in conditions of increased safety. As it is known, the greatest damage to crops and agricultural machinery are caused by fires.

As analysis shows the main causes of fires on combine harvesters are: short-circuited electrical wiring, rupture of hydraulic hoses and hydraulic hoses. short circuit of electrical wiring, rupture of hydraulic hoses and getting oil on the heated surfaces of the engine. heated surfaces of the engine.



And since inspections often reveal that some combines that some combines go into the field with unadjusted lubrication systems, fuel supply, hydraulics, as a result of which they are quickly covered with combustible dust. dust, which quickly spreads fire throughout the combine. Often combine harvesters go out without primary fire extinguishing equipment.

No less fire hazard is posed by technological processes of drying, cleaning and storage of grain. The most frequent cause of fires and ignitions is non-compliance with the drying regime of grain with increase of coolant temperature in dryers. As a rule, it occurs as a result of violation by the operating personnel of the established technological regulations of dryers operation, which leads to catching fire inside the grain, disabling of expensive equipment and sometimes destruction of the whole mechanized complex. mechanized complex.

In order to prevent such cases, all agricultural workers must remember that compliance with fire safety rules - the duty of everyone's responsibility, on the fulfillment of which depends on the safety of the harvest.

In case of In case of fire in the harvesting areas, the mechanizer is obliged to:

- give a signal (sound, signal (sound, light, flags) to the driver of fire-fighting or adapted for the purposes of fire extinguishing equipment;
- to start extinguishing the fire with available fire extinguishing means and withdrawing the to extinguish the fire with available fire extinguishing equipment and withdraw the combine harvester from the bread massif, throw out the straw from the straw collector of the combine harvester.
- take measures to limit fire spreading through the bread massif (plow combustion zone).

III. CONCLUSION

Fire protection can be provided by engineered fire protection measures and active fire protection. Fire protection includes a set of measures to prevent fires or reduce their consequences.

Active fire protection is measures that ensure the successful extinguishing of fires or explosive situations. In this paper, the main points of fire safety management and measures to ensure this safety have been considered. Allocation of forces and resources for fire safety is very important. With proper organization, the probability of fire can be reduced and the damage in case of fire can be greatly reduced.

Attention to fire safety and timely training of personnel accompanied by instruction helps to avoid fire hazards and to take necessary measures in case of fire and explosion, which helps to avoid loss of life and considerable damage to property. Therefore, it is necessary to pay due attention to fire safety measures.

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ПОЖАРНАЯ БЕЗОПАСНОСТЬ НА СЕЛЬСКОХОЗЯЙСТВЕННЫХ ОБЪЕКТАХ В РОССИИ: ОСНОВЫ ПРОФИЛАКТИЧЕСКИХ МЕРОПРИЯТИЙ

Арифуллин Евгений Заудятович¹, Овчинникова Татьяна Валентиновна²,
Звягина Лилия Николаевна³

¹Кандидат технических наук, доцент, Воронежский государственный технический университет,
ул. 20-летия Октября 84, Воронеж, Россия, E-mail: arif-vrn@mail.ru

²Кандидат биологических наук, доцент, Воронежский государственный технический университет,
ул. 20-летия Октября, 84, Воронеж, Россия, E-mail: tvo0104@mail.ru

³Кандидат технических наук, доцент, Воронежский государственный технический университет,
ул. 20-летия Октября 84, Воронеж, Россия, E-mail: zvyagina.l@list.ru

Аннотация

В условиях становления рыночной экономики проблемы безопасности жизнедеятельности становятся одними из самых актуальных. Они связаны с травмами и профессиональными заболеваниями, которые в некоторых случаях приводят к летальному исходу, в то время как более половины промышленных и сельскохозяйственных предприятий относятся к классу максимального профессионального риска. В связи с этим особое внимание следует уделить подготовке населенных пунктов к тушению пожаров, разработке соответствующих оперативных документов. В данной статье будут рассмотрены основные факторы возникновения пожаров в сельской местности, их классификация, причины возникновения пожаров, а также вопросы управления противопожарной профилактикой в сельской местности.

Ключевые слова: сельское хозяйство, земля, безопасность, пожар, страна.

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