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ANALYSIS OF PROBLEMS OF IMPROVING THE ENVIRONMENTAL SAFETY OF ANIMAL HUSBANDRY

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Abstract. Among the possible solutions to the problem are the creation of closed biotechnical systems based on a combination of animal husbandry with protected soil enterprises, whose plants can utilize heat and carbon dioxide emissions and nutrients from discharges, the use of systems for cleaning emissions of livestock enterprises based on the principles of liquid deposition of pollutants and the use of photo-cleaning systems with sources of hard ultraviolet radiation, etc.

Keywords: animal husbandry, ecology, closed biotechnical systems, best available technologies.

According to FAO estimates, greenhouse gas emissions from agriculture have almost doubled over the past 50 years and, if no measures are taken to reduce them, could increase by another 30% by 2050. More than half (about 51 %) of all emissions on a global scale are accounted for by livestock and products of this industry: annual greenhouse gas emissions exceed 32 billion tons [1]. There is also an inverse problem - the negative impact of climate change on animal husbandry [2].

In the agricultural sector of Russia, greenhouse gas emissions amount to more than 142.4 million tons of CO₂ equivalent. The most significant sources are direct emissions of nitrous oxide from agricultural soils, methane emissions from manure disposal and internal fermentation in animal organisms, which are 38.3%, 17.0% and 28.0%, respectively [3,4].

In the area of livestock complexes and poultry farms, the air is polluted with microorganisms, dust, ammonia, hydrogen sulfide, methane and other animal products that often have unpleasant odors (more than 45 different substances). Moreover, if there is a significant dilution of these emissions in the atmosphere, then the concentration of harmful substances on the territory of livestock enterprises and near them is quite high and with prolonged exposure to employees of livestock farms and complexes leads to various diseases. These pollutants also affect animal organisms, reducing their productivity. This is especially true for relatively long-lived animals, such as cows on dairy and breeding farms.

Chemical and biological air pollution is largely caused by organizational reasons (low production culture) and insufficiently developed technologies for efficient use of waste products, waste heat recovery, etc. on cattle-breeding complexes, farms and integrated poultry farms.

Possible ways to minimize emissions of polluting gases, bacteria and heat from large livestock complexes, poultry farms: development and research of environmental and economic efficiency of ventilation air purification and heat recovery systems based on new physical or organizational principles, creation of closed biotechnical systems based on a combination of animal husbandry with protected ground enterprises, including mushroom growing.

In many countries of the world, the technology of processing organic waste using biological methods is widely used, for example, the use of earthworms, housefly larvae, microorganisms, microalgae, phototrophic bacteria. It is also possible to significantly reduce the release of harmful decomposition products of manure by using microbiological fermentation accelerators, for example, developed by vniiv (Kazan). The introduction of the technology for processing organic waste by biological fermentation, developed by the all-Russian research Institute for the use of reclaimed land (Tver) together with the American company "Bioferm Inc", which is based on the management of the growth and development of aerobic thermophilic bacteria, can also have a great effect. The finished product, which received the brand name "farmway", is used, for example, in the United States as an organic fertilizer and as a litter for birds and livestock [5].

The impact of livestock enterprises on the discharge of pollutants into water bodies is also significant. In this regard, the problem of small farms is more acute than in livestock complexes and poultry farms, where, as a rule, effective treatment facilities are operating, including a combination of mechanical, chemical and biological wastewater treatment systems. Here, it is more necessary to improve the drainage systems of the territories of complexes and the treatment of flowing meltwater and rain. Due to the fact that large livestock enterprises are objects that have a significant negative impact on the environment, legal entities should pay

special attention to compliance with environmental protection requirements, starting from the choice of technological solutions and ending with obtaining all necessary permits.

According to the decree of the RF Government No. 1029, the implementation of economic and (or) other activities for the breeding of poultry (with a design capacity of 40 thousand hen places and more) and growing and breeding pigs (with a design capacity of 2 thousand seats or more), sows (with a design capacity of 750 seats or more) refers to the application of the best available technologies

Therefore, the task of specialized institutes is to create such a register of the best available technologies that reduce the negative impact of livestock farms, complexes and poultry farms, and to Refine to practical application in the climatic conditions of various regions of the country those well-known technologies that cannot be considered available due to climate restrictions. At the same time, it is important to develop a mechanism for economic incentives for the introduction of such technologies and projects, since many of them require significant investment and are not available to enterprises due to economic restrictions. When choosing a site for the construction and operation of a livestock and poultry facility, it is necessary to provide for the allocation of agricultural land for the full use of manure and sewage as organic fertilizers, taking into account environmental protection.

In each of the livestock or poultry should be provided by the method and technical means for disinfection of manure or litter. For this purpose, long-term aging, chemical, biological or thermal methods can be used.

The draft sanitary rules also establish that for disinfection of manure or manure by the method of aging, the storage capacity should be taken from the calculation of keeping the volume of manure or manure for 6 months, and pig manure - for 12 months. Storage facilities should be sectional, they are fenced off. However, this method is unacceptable for disinfection of manure contaminated with resistant microorganisms (pathogens of tuberculosis, anthrax, etc.), as well as for low temperature zones where pathogenic microorganisms survive much longer than the specified time.

The agricultural business is not concerned with the environmental problems of the world and the country, because its goal is to get maximum profit with minimal investment. Therefore, the problem of improving the environmental safety of agriculture can only be solved by economic levers that allow not only tariffs or fines, but also incentives in the form of preferential loans, subsidies, tax minimization, etc. to direct agricultural businesses to choose and apply the best available livestock production systems, technologies, and projects. This is a serious task that can only be solved by joint efforts of the legislative and Executive authorities, science and agribusiness.

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ЖИЗНЕННЫЙ ПУТЬ ВЯЧЕСЛАВА ВАСИЛЬЕВИЧА СУРИКОВА



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