

ORIGIN ASSESSMENT OF WATER QUALITY FISHERY PONDS FOR POLLUTION OF ORGANIC ORIGIN

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The degree of toxicity of contaminated wastewater livestock enterprises Kiev region. It was found that fattening rates Nemishayevo Agrotechnical College, which is used for fishery purposes, does not comply with existing ISO can be used for fish

Keyword: *organic pollution, fishery ponds, hydrochemical composition.*

Pollutants entering into natural water bodies, leading to changes in the water quality, which is mainly found in violation of the physical properties of its chemical composition. The main sources of pollution and contamination of water is inadequately treated sewage and industrial utilities, waste water and livestock facilities.

A serious concern is water pollution by pesticides and fertilizers that come from the fields along with streams of rain and melt water. Due to the intensification of livestock increasingly being felt drains companies in the field of agriculture [8, 9]. In chemicals in the river gets a large amount of feces and other organic residues from farms where grown cattle, pigs and poultry. Many organic waste also enters the processing of agricultural products (meat carcasses during processing, leather, food processing and canning, etc.).

In wastewater contains about 60% of organic origin, belonging to the same category of biological contamination (bacteria, viruses, fungi, algae).

The growth of animal waste, poultry processing plants that come in the form of pollution to natural and artificial reservoirs requires evaluation of existing and potential dangers of change in aquatic ecosystems [3, 6, 7].

The aim of research was to determine the toxicity of wastewater livestock enterprises Kiev region.

Materials and methods research.

The object of the study was the water fishery ponds.

Hydrochemical composition of water is determined in two reservoirs: fattening pond for growing carp Nemishayevo Agrotechnical College is located in the dairy farm, which has advanced wastewater treatment systems and fisheries "JSC Zabirya", which is near the rate had livestock farms.

Water quality on the basic parameters were determined by standard methods in hydrochemistry [1,2]. Water samples were collected during the period from 5 to 16 October 2014.

Statistical analysis of the results was performed using Exel.

Results. Indicators hydrochemical composition of water in reservoirs studied are presented in Table 1.

The pH of the pool water "JSC Zabirya" was within acceptable standards and this value is most favorable for growing carp.

1. Indicators hydrochemical composition of water

Indicator	TLV	Pond of "JSC Zabirya" (control)	Pond of Nemishayevo Agrotechnical College
pH,	6,50-8,50	7,81±0,64	6,32±0,61
Total oxygen, mg/l	5,00	6,80±0,31	5,27±0,58
Oxidation mg/l	7,20	7,18±0,86	9,60±0,99*

Pond water pH Nemishayevo Agrotechnical College smaller TVL by 1.2 units. It is known that the pH of natural waters defined catchment geology. However, the acid reaction of water affects the respiration and metabolism in fish,

so that it cannot fully digest food, leading to delay its growth. By reducing the pH to 6.5 in carp violated nitrogen metabolism [3, 5].

In assessing the sanitary water is very important indicator is the content of dissolved oxygen, because the presence of water is a prerequisite for the existence of most organisms that inhabit ponds, including fish [5]. Comparing the study determined the amount of dissolved oxygen in the water with the norm that must be contained in these conditions, it is possible to conclude that the degree of contamination of water reservoirs studied. Thus, the overall level of oxygen in the studied reservoirs close to optimal for growing carp, namely 4,8-6,2 mg/l. The greatest amount of dissolved oxygen in the water of the pond watching "OJSC Zabirya." In water pond Nemishayevo Agrotechnical College its number decreased compared with the control 22.5%. This is obviously due to the pollution of water and organic matter combined with increased oxidation of water in these ponds.

Oxidation of water in fattening pond Nemishaevo State Agricultural College exceeded the norm at 18.75% and became "JSC Zabirya" is in the normal range.

Changing the oxidation of water is likely to depend on the presence in it easily oxidized and heavily oxidized organic substances non-oxidizing salts and inorganic acids [4].

Found increasing alkalinity of the pool water "JSC Zabirya" at 29.43% and pond Nemishayevo Agrotechnical College - 2.4 times compared to the MPC (Table 2).

2. Indicators alkalinity and hardness Water Research.

Indicator	TLV	Pond of "JSC Zabirya" (control)	Pond of Nemishayevo Agrotechnical College
Alkalinity, mol/l	1,80-3,50	4,53±0,21	8,40±0,74*
Hardness of water, mol/l	2,00-6,00	6,50±0,11	7,10±0,58

Such changes may depend on the concentration of weak acids, mainly coal, coupled with alkali and alkaline earth metals.

As a result of studies found increasing hardness of the water of the pond "JSC Zabirya" and Nemishayevo Agrotechnical College, respectively, 8.33% and 18.33% compared to the MAC. Since hardness depends on the presence in it mainly alkaline earth metals calcium and magnesium and their salts, the results are consistent with the concentration of calcium, magnesium, chloride, phosphate and sulfate.

Thus, the level of calcium in the water in the control and experimental ponds comparable to TLV was higher at 21.46% and 24.57%, magnesium - by 27.16% and 2.33 times (Table. 3).

3. Hydrochemical parameters studied reservoirs

Indicator	TLV	Pond of «"JSC Zabirya"» (control)	Pond of Nemishayevo Agrotechnical College
Calcium mol/l	6,43	7,81±0,36	8,01±0,73
Magnesium, mol/l	1,62	2,06±0,07	3,77±0,23*
Chloride, mg/l	30,00	31,49±2,05	32,64±0,72
Phosphates mg/l	до 0,50	3,75±0,21*	12,25±0,74*
Sulfates, mg/l	25,00- 30,00	179,00±4,29*	108,00±4,71*

The content of chlorides in water ponds "JSC Zabirya" (control) and Nemishayevo Agrotechnical College (Research) compared with the TLV was higher, respectively, 4.97% and 8.80%, and sulfates - in 5.97 times and 3, 6 times.

The presence of chlorides in water indicates the origin of organic pollution, especially in conjunction with chlorides detect ammonia, nitrites and other substances. A significant increase in the content of sulfates in water reservoirs studied under oxygen deficiency can lead to sustained accumulation of hydrogen sulfates as a result of the restoration of sulphate salts. The level of phosphate pool "JSC Zabirya" experiment in water increased 7.5 times, experiment 2 - 24.5 times in comparison with the MAC.

The iron content as one of the most important nutrients in the water ponds "JSC Zabirya" and Nemishayevo Agrotechnical College was within permissible concentrations positively affected the intensity of phytoplankton and aquatic vegetation for the formation of chlorophyll, the qualitative composition of microorganisms in water and hematopoietic a fish.

The concentration of ammonia in the water pool, located on the territory Nemishayevo crop of college compared to TVL rate exceeded 84 times (tab. 4).

4. The content of nitrogenous substances in water reservoirs studied

Indicator	TLV	Pond of «"JSC Zabirya"» (control)	Pond of Nemishayevo Agrotechnical College
Ammonia mg/l	-	-	4,20±0,23*
Nitrite mg N/l	до 0,05	0,042±0,004	0,42±0,04*
Nitrates mg N/l	до 2,00	1,10±0,04	4,18±0,71*

Increasing the level of ammonia in the water pool Nemishayevo Agrotechnical College is a constant, which is associated with significant pollution sinks its dairy farms [10, 11]. The increase of ammonia in water can also be associated with its introduction as part of organic fertilizer to fertilize ponds inorganic forms of nitrogen, which is the basic building blocks of unicellular

organisms, phytoplankton and aquatic plants. The high content of ammonia nitrogen in water leads to poisoning of aquatic organisms as free ammonia is their strong poison. It is believed that the high content of ammonia in water provides indirect toxic effects on the body. Poisoning occurs due to the inability of fish rid of excess ammonia that builds up during the exchange of nitrogen [6].

The content of nitrites in the water pond farms "JSC Zabirya" was within the permissible fluctuations, but their concentration in a pond Nemishayevo Agrotechnical College exceeded the norm by 8.4 times. Since the presence of nitrites in the water caused by the oxidation of nitrogen at nitrifying microorganisms or recovery of nitrate nitrogen under anaerobic conditions and the significant amount of organic substances, increase their level indicates a strengthening of decomposition of organic matter in terms of slower oxidation of NO_2 and NO_3 , indicating the contamination of water object.

Nitrate is the end product of mineralization of organic nitrogen compounds. Their presence in water in large quantities at high oxidation and presence of nitrite and ammonia indicates that mineralization processes have not been completed or ongoing flow of organic contaminants. This is consistent with data obtained on the growth of nitrate in the water pool Nemishayevo Agrotechnical College comparable with MAC 109%. The water of the pond "JSC Zabirya" nitrate content was within acceptable standards.

Number of impurities in the water of all investigated farms exceed the TVL. Thus, their content in the water of the pond "JSC Zabirya" compared to MPC higher by 22.12% and in a pond Nemishayevo Agrotechnical College - at 11.86%.

Conclusions.

1. Thus was fattening Nemishayevo Agrotechnical College, which are used for fishery purposes, does not comply with existing TVL.
2. Elevated levels of most chemicals in the water pool in the research indicate serious potential danger related factors such as microbial contamination, particularly of the bacteria *E. coli*, salmonella, streptococcus, staphylococcus and more.

3. Waste water dairy farm located near fattening pond Nemishayevo Agrotechnical College not only pollute the environment, but also has the potential danger for the production of environmentally safe and quality products fish farming.

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ОЦЕНКА КАЧЕСТВА ВОДЫ РЫБОХОЗЯЙСТВЕННЫХ ВОДОЕМОВ ПРИ ЗАГРЯЗНЕНИИ ОРГАНИЧЕСКОГО ПРОИСХОЖДЕНИЯ

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Определена степень токсичности загрязнений сточных вод животноводческих предприятий Киевской области. Установлено, что нагульный пруд Немишаевского агротехнического колледжа, который используются для рыбохозяйственных целей, не соответствует требованиям существующего ГСТУ, следовательно, не может быть пригодным для выращивания рыбы.

Ключевые слова: органическое загрязнение, рыбохозяйственные водоемы, гидрохимический состав

ОЦІНКА ЯКОСТІ ВОДИ РИБОГОСПОДАРСЬКИХ ВОДОЙМ ЗА ДІЇ ЗАБРУДНЕНЬ ОРГАНІЧНОГО ПОХОДЖЕННЯ

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Визначено ступінь токсичності забруднень стічних вод тваринницьких підприємств Київської області. З'ясовано, що нагульний ставок Немишаєвського агротехнічного коледжу, який використовують для рибогосподарських цілей, не відповідає вимогам існуючого ДСТУ і не може використовуватись для вирощування риби.

Ключові слова: органічне забруднення, рибогосподарські водойми, гідрохімічний склад
