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QUALITATIVE ANALYSIS OF WASTEWATER

Abstract. Wastewater is the result of many human activities, and its volume is growing more and more every year. Usually the issue of wastewater treatment is solved in municipal wastewater treatment plants. These facilities have been operated in our country for many years, the degree of their consumption is very high, it is more than 60%, and this has a bad effect on the environment.

In our Republic of Kazakhstan, the first urban wastewater treatment plants appeared in the 1950s. In the 20th century, at a time when mechanical sewage treatment plants (MOS) were built and put into operation in large cities. Urban wastewater was discharged into filtration fields or water tanks without adequate treatment. Currently, there are many used sewers. Consumption was over 90%. In our city of Taraz, there is absolutely no scythe, urban outflows through temporary wells are immediately discharged to filter fields, this was in 2010. During this time, the picture has not changed. Urban sewerage is associated not only with residential buildings, but also with industrial plants. This causes an excessive hydraulic load on filtration zones that pollute groundwater. City leaders promised to solve this problem 10 years ago, but the problem still exists and is current.

Keywords: wastewater, degradation of aquatic ecosystems, pollution, sewage, sewage, filtration.

Introduction. Taking care of public water resources requires constant waste control. They are formed as a result of mud therapy and have a significant impact on the surrounding nature. In our world, this problem is inherent to the whole world. Wastewater is a stream of water contaminated by human economic and industrial activities. This liquid passes minerals and organic substances through the sewage treatment system. Well known that purified water returns to the shot, after preparation it is delivered to domestic and public places as drinking water. Sewage is liquid waste containing various pollutants, inorganic and organic compounds. To determine the degree of sewage contamination, the total concentration of contaminants is usually determined. There are such types as:

The first is slightly contaminated, contains impurities of 1-500 mg / l;

The second is moderately polluted, contains 500-5000 mg / l of impurities;

The third is heavily polluted, contains impurities of 5000-30000 mg / l;

The fourth is dangerous-impurities above 30,000 mg / l.

Poor quality of wastewater treatment leads to problems such as degradation of aquatic ecosystems and various diseases that will be transmitted by water from contaminated sources, Wells, freshwater wells. The Problem is significant not only in our country, but all over the world. For example, according to a UN World Report, the amount of wastewater transported worldwide, with the exception of highly developed countries (to which Kazakhstan does not yet belong), their total

pollution is growing at a steady pace. At the same time, as noted in the article, the amount of wastewater is discharged into the environment without proper treatment [1].

Atmospheric wastewater is usually classified as slightly polluted. They create pollution washed from the ground. They contain minerals with a small amount of organic matter. They are formed as a result of precipitation and melting of snow. Cities have storm drains to collect them. Sewage has a very strong impact on the surrounding nature. If organic matter gets into the sewage tanks, the amount of dissolved oxygen will drop sharply. Highly organized organisms die in such conditions, and their area of residence also deteriorates, so I think that every city should have a system of high-quality water treatment. The composition of sewage pollution is completely different. It can contain organic (mainly food waste, plant and animal residues) and inorganic elements (according to my searches, these are sand, clay, acids, salts and bases, slag), biological objects (molds and yeast, algae and bacteria). Drains of the biological category must be thoroughly cleaned, since they can contain pathogens of dangerous infections that can cause typhoid fever, anthrax, dysentery and many other infectious diseases in humans. This has happened more than once in my practice. For example, my dad poisoned himself with standing water, which he unexpectedly drank, which caused him to have diarrhea and vomiting.

In terms of the ability to decompose pollution are divided into:

1) preserved (do not decompose, do not enter into chemical reactions). These are heavy metal salts, phenols, pesticides. Without cleaning systems or with surface cleaning, they get into the tanks and form a deposit on the bottom;

2) non-preservative (subject to oxidation or sorption). In case of contamination with such substances, it is possible to self-clean the tank [2].

There are 3 main types of wastewater that can be described:

1) domestic wastewater is wastewater generated in connection with everyday human life – its source is bathrooms, kitchen faucets, toilets located in residential and administrative buildings and residential buildings.

2) industrial waste is the result of the activities of factories, industrial plants, car washes.

3) storm water – rainwater, meltwater, irrigation water flowing into drainage systems from the areas of settlements, economic facilities and others.

When checking the composition of sewage, you definitely need to know:

- What Exactly and what ingredients are in the wastewater?;
- detection of the source of pollution;
- purification methods used to remove or neutralize contaminants;
- sewage treatment efficiency.

In order to accurately determine the methods of treatment, it is necessary to conduct a full study of all types of wastewater (industrial, sedimentary and domestic).

In addition, it is necessary to conduct an analysis of the treated wastewater, this is necessary to determine the performance of the treatment plant, determine the corrections or additions in the treatment technology.

In order to determine the quality of processing and the absence of hazardous components in waste disposal, waste analysis should be carried out periodically.

Wastewater analysis is one of the most difficult areas of chemical analysis, as the study of the qualitative and quantitative composition of wastewater is difficult due to:

- complex composition of sewage;

- large range of pollutant concentrations;
- changes in composition (instability of wastewater over time);
- low concentration of impurities [3].

Research conditions and methods. A complete study of the object under study should be carried out in accordance with a certain order in order to find personal ions, cations and anions. This type of training is called systematic. We started studying this type of analysis at the University in early September.

In systematic analysis, the solution first determines its cations, and then negative anions. If the systematic analysis parameter is selected, groups V (fifth), then IV (fourth), III (Third), II (second) are deposited first, and cations and (first) groups remain in solution.

The analysis of a mixture of cations of different groups can be carried out according to the separation method, which is accurately described in almost all chemical textbooks. Qualitative analysis of the material is carried out according to a certain algorithm.

It is necessary to analyze how the substance:

- PAINTING the burner with some colored flame;
- Distribution;
- Pearl color and fins;
- interaction with dilute acid H₂SO₄;
- interaction with concentrated sulfuric acid H₂SO₄;
- solubility in water (determine the pH of the solution);
- interaction with an oxidizer and reducing agent to evaporate and remove a certain substance

- go to the solution.

After that, it is necessary to conduct a systematic analysis:

- Find cations;
- Find anions [4].

Chromatography-after studying this analysis, I will describe it as follows: it is a method of separating the components or solutes of a mixture based on the relative amounts of each solute distributed between a moving fluid flow called a moving phase and a continuous stationary phase.

The mobile phase can be liquid or gaseous, while the stationary phase can be solid or liquid.

The word "chromatography" means "color writing", but it is also considered incorrect because it often does not combine paper, ink, ink, or writing.

There are four types of chromatography (table.1).

I tried to write them down in a fairly ordinary language.

Table 1

Types of chromatography.

Thin-layer chromatography	Organic solvent	Aluminum oxide or silica gel, in the plate	Decomposition due to distribution processes and specific interactions with NF
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continuation of table 1:

Gas chromatography	Helium or nitrogen	A thin layer of liquid or polymer on an inert solid substrate, in the column	Separation due to the difference in boiling points and specific interactions with NF
Liquid chromatography	Solutions	Sorbents, in the column	Separation due to specific interactions with NF

Application: Some chromatographic detectors can detect the amount of material on a scale of one billion. Because of this, chromatography is now widely used in:

- in criminology: analysis of samples taken during pollution monitoring from the crime scene;
- to detect small concentrations of harmful pollutants in the air and water;
- in the field of medicine: in the process of spending and quality control of biological products and pharmaceuticals;
- in the food industry: damage to food, determination of food quality, as well as control of food additives;
- legal actions: determine the presence of alcohol in the blood and cocaine in the urine.

Hach Lange spectrophotometer: equipped with a wide-spectrum radiation source, an optional error protection system.

Spectrophotometry method: a widely used method for quantitative and qualitative determination of substances and elements in a liquid medium.

Analyzed objects: drinking water, tap water, bottled, natural, sewage, Marine; soils, soils, waste, daily sediments.

We used this device in the lab. First you need to connect your device to the network. In addition, the cuvette must be crystal clear so that the rays pass through and do not interfere with the calculation of the device. You need to choose the specific test you want to take. Reset the value before starting the test and then start the measurement. The analysis is calculated in a few seconds.

Experiment

1. Organoleptic analysis

To perform this analysis, I performed an organoleptic analysis, that is, an analysis that checks taste, color, smell, turbidity.

1) "Tassey".

The color is transparent.

The taste is pleasant, characteristic of this brand, slightly sweet.

No smell.

2) "Bonaqua".

The color is crystal clear.

The taste is pleasant, characteristic of this brand.

No smell.

3)"tap water (from the water tower of Zhambyl district, Zhambyl district, Asa village)".

The color is transparent.

He has no taste.

No smell.

4)"water from the canal (from the ASA River)".

The color is cloudy yellow.

The smell is noticeably unpleasant earthy.

Pollution-moderately polluted.

Comparative analysis of water.In this analysis, I used the Hach Lange Dr-2800 spectrophotometric device to detect cations and anions in water. The work was carried out in the presence of a laboratory assistant and a trainee teacher. I followed a certain algorithm that guided me in the correct operation of this device.

ST RK 1432-2005: "drinking water packed in containers, including natural mineral and drinking canteens".

St RK ISO 9001-2016: the quality management system is an integral part of the overall enterprise management system, which should ensure the stability of the quality of products or services and increase customer satisfaction.

A quality management system is a business process system built on the basis of a process management model and aimed at managing the quality of an organization's products or services.

The sample was poured into a crystal clear cuvette and checked for the content of chemicals indicated on the packaging of drinking water to make sure that this or that water complies with Gost. We also tested tap water.

Main composition, mg / DM3; mineralization-no more than 0.3 g / DM3.

This table consists of my laboratory calculations using the Highlange Dr-2800 spectrophotometric device (Table 1).2). The work took place in the presence of a trainee teacher and a laboratory assistant.

Table 2

Calculations made using the HIGHLANGE Dr-2800 spectrophotometric device

№	Water name	K^+	Ca^{+2}	Mg^{+2}	Cl^-	SO_4^{-2}
1	BonAqua	0,4	0,20	0,10	0,10	2
2	TASSAY	1.9	0,18	9	0,4	2
3	Tap water	0,2	0,13	0,6	0,3	2

BonAqua

Conclusions: the chemical composition of water corresponds to GOST RK. Cations and anions comply with the standards of ST RK 1432-2005.

TASSAY

Conclusions: Also, the chemical composition of water corresponds to ST RK 1432-2005.

Checking the water for a hydrogen indicator

In order to test the water for the pH of the medium. I poured different samples into 3 chemical glasses. I used an indicator universal strip, soaked the

paper for two seconds and pulled it out. I waited for the paper to dry. After drying, each sample was colored in a certain medium: 1) "6" – strongly acidic medium (yellow); 2) "7" – neutral medium (lemon yellow).

Water turbidity analysis

I also carried out the analysis of river water for turbidity using the spectrophotometric apparatus "Hach Lange DR-2800". The turbidity was – 28.1, which is below the measurement range. The analysis of "tap", drinking water "TASSAY", "BonAqua" did not show results for turbidity. The water has a transparent color, which is not typical for the definition of turbidity.

Analysis of the composition of tap water

For the analysis of tap water, water from the village of Asa, Zhambyl region, Zhambyl district was used. The chemical composition of the water corresponds to ST RK 1432-2005. The water is drinkable.

Conclusion. Wastewater is an integral part of our lives. I think that the care of wastewater will save our world, because it is one of the global problems of our life and our planet, because any water is a source of life. Not all people understand the importance of wastewater. Wastewater is responsible for the processing of water into clean and not only. Every person on our planet should think about the proper consumption of water. Water occupies 70.8% of the area of our planet, but there are still countries that suffer from its shortage or they themselves polluted their source.

In my course work, the topic of wastewater and how to clean it is touched upon. I think our state should pay attention to this issue very responsibly, because people, animals, and the environment suffer from the consequences.

From my theoretical part of the course, you can learn about the methods of wastewater analysis. I think analysis is one of the main keys to solving this problem. You can also learn about the method of wastewater treatment. In my opinion, Kazakhstan needs to update the CBS and use new technologies.

In experimental experiments, you can get acquainted with some methods of analyzing your favorite drinking water, as well as tap water and river water. You can check your water sources using my methods of analysis.

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АҒЫНДЫ СУЛАРДЫ САПАЛЫҚ ТАЛДАУЫ

Аңдатпа. Ағынды сулар адам қызметінің көптеген түрлерінің нәтижесі болып табылады және олардың көлемі жыл сайын артып келеді. Әдетте, Ағынды суларды тазарту мәселесі муниципалды тазарту қондырғыларында шешіледі. Бұл нысандар біздің елімізде көптеген жылдар бойы пайдаланылып келеді, оларды тұтыну деңгейі өте жоғары, ол 60% - дан асады, бұл қоршаған ортаға жаман әсер етеді.

Ағынды суларды тазарту сапасының төмендігі су экожүйелерінің деградациясы және ластанған көздерден, құдықтардан, Тұщы су құдықтарынан сумен берілетін әртүрлі аурулар сияқты мәселелерге әкеледі. Бұл мәселе тек біздің елде ғана емес, бүкіл әлемде өзекті. Мысалы, БҰҰ-ның Дүниежүзілік есебіне сәйкес, жоғары дамыған елдерді қоспағанда (Қазақстан әлі қатысы жоқ) бүкіл әлем бойынша тасымалданатын сарқынды сулардың көлемі олардың жалпы ластануы тұрақты қарқынмен өсуде. Сонымен қатар, мақалада айтылғандай, ағынды сулардың көп мөлшері тиісті тазартусыз қоршаған ортаға төгіледі.

Қазақстан Республикасында алғашқы қалалық тазарту құрылыстары 1950 жылдары пайда болды. 20 ғасырда, ірі қалаларда механикалық тазарту қондырғылары (МОС) салынып, пайдалануға берілген кезде. Қалалық ағынды сулар тиісті тазартусыз сүзу алаңдарына немесе су ыдыстарына төгілді. Қазіргі уақытта көптеген кәріз коллекторлары қолданылады. Тұтыну 90%-дан асты. Біздің Тараз қаласында өрім мүлдем жоқ, уақытша құдықтар арқылы қалалық дренаждар бірден сүзгі алаңдарына төгіледі, бұл 2010 жылы болды. Осы уақыт ішінде сурет өзгерген жоқ. Қалалық кәріз тек тұрғын үйлермен ғана емес, сонымен қатар өнеркәсіптік кәсіпорындармен де байланысты. Бұл жер асты суларын ластайтын сүзу аймақтарына шамадан тыс гидравликалық жүктеме әкеледі. Қала басшылығы бұл мәселені 10 жыл бұрын шешуге уәде берді, бірақ мәселе әлі де бар және өзекті.

Тірек сөздер: ағынды сулар, су экожүйелерінің деградациясы, ластану, ағынды сулар, кәріз, сүзу.

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КАЧЕСТВЕННЫЙ АНАЛИЗ СТОЧНЫХ ВОД

Аннотация. Сточные воды являются результатом многих видов человеческой деятельности, и их объем с каждым годом растет все больше и больше. Обычно вопрос очистки сточных вод решается на муниципальных очистных сооружениях. Эти объекты эксплуатируются в нашей стране уже много лет, степень их потребления очень высока, она составляет более 60%, это плохо сказывается на окружающей среде.

Низкое качество очистки сточных вод приводит к таким проблемам, как деградация водных экосистем и различные заболевания, которые будут передаваться с водой из загрязненных источников, колодцев, пресноводных колодцев. Эта проблема актуальна не только в нашей стране, но и во всем мире. Например, согласно Всемирному докладу ООН, объем сточных вод, транспортируемых по всему миру, за исключением высокоразвитых стран (к которым

Казахстан пока не относится), их общее загрязнение растет устойчивыми темпами. В то же время, как отмечается в статье, большое количество сточных вод сбрасывается в окружающую среду без надлежащей очистки.

В нашей Республике Казахстан первые городские очистные сооружения появились в 1950-х годах. В 20 веке, в то время, когда в крупных городах были построены и введены в эксплуатацию механические очистные сооружения (МОС). Городские сточные воды сбрасывались в поля фильтрации или резервуары для воды без надлежащей очистки. В настоящее время существует множество используемых канализационных коллекторов. Потребление составило более 90%. В нашем городе Тараз абсолютно нет косы, городские стоки через временные колодцы сразу сбрасываются на фильтрующие поля, это было в 2010 году. За это время картина не изменилась. Городская канализация связана не только с жилыми зданиями, но и с промышленными предприятиями. Это приводит к чрезмерной гидравлической нагрузке на зоны фильтрации, которые загрязняют грунтовые воды. Руководство города обещало решить эту проблему 10 лет назад, но проблема все еще существует и является актуальной.

Ключевые слова: сточные воды, деградация водных экосистем, загрязнение, стоки, канализация, фильтрация.