IJIMM, Volume 2, Issue 6, 2024 ISSN: 2995-5319
http://medicaljournals.eu/index.php/IJIMM/issue/view/3

INTERNATIONAL JOURNAL OF INTEGRATIVE AND MODERN MEDICINE

Improving the Training of Environmental Facilities Protection Engineers

Ruziyev J. E., Shakarov N. J., Nomirov M. N.
Samarkand State University of Architecture and Construction named after Mirzo Ulugbek

Ruziyev E. A., Sulaymonova M. B.
Institute of Biochemistry, Samarkand State University named after Sharof Rashidov

Abstract: In order to organize the protection of environmental objects, the article evaluates the impact of water objects on the use of underground, surface and waste water in urban and rural areas, the selection of land areas for the allocation of architectural and construction objects and residential areas, land in regional districts potability characteristics of underground and surface drinking water, their use for irrigation purposes in the cultivation of agricultural products, effects on soil composition, and the results of chemical, electrochemical and spectroscopic determination of analytical properties of some products are discussed.

Keywords: ecology, engineer, water, soil, product, analysis, composition, electrochemistry, spectroscopy.

The growth of chemical production associated with the development of science and technology has a negative impact on the environment and the ecological environment of our republic in general. In particular, underground and surface drinking water has been poisoned, the earth's atmosphere has been polluted, the green-grass layer of the earth has been damaged, underground resources are decreasing, and some biological species in the animal world are being ruthlessly destroyed. That is why some deserts are disappearing.

Today, the most urgent of the main problems in agriculture and housing construction is irrigated land and its efficient use. But in recent years, even people living in rural areas are trying to use the land used for growing agricultural products as house and yard land. Due to the increase in the population not only in cities, but also in the conditions of districts, the desire to choose land for construction has increased. Therefore, conservation of irrigated lands is an important aspect of protecting our future and its life.

In order to meet the needs of the population of our republic for food products, the need to efficiently use the fertile soil of the lands suitable for irrigation and the availability of surface water, which has a natural and mineral composition, has risen to the level of the first factor.

We are all sure that today there is no certainty about the increase of surface water, rivers and streams. In addition, in agriculture, the soil composition of areas where the same products, especially cotton, grain, corn and various leguminous plants are grown for many years, is damaged due to the use of various chemical agents added to it to increase productivity, and later it becomes impossible to grow products from other types of agricultural crops [1-2].

That is why the land areas allocated for the construction of housing necessary for the needs of the population, the construction intended for urban development, cultural-whitening facilities are not at the expense of ready-made arable land, the lands that have lost their possibilities of use, hills, hills and foothills. If it is built on the land, it will be appropriate, of course. Some residential areas in urban areas are built very close to ditches, which serve as sources of sewage, and are built without meeting the requirements of architectural and construction structures and requirements of urban planning, and are probably not even in the plans of any state construction organizations. . Such residential areas are

located in the parts of the Siyob stream, which is a sight of the city of Samarkand, occupying most of the coastal parts.

The part of Siyob stream that flows through residential areas

A view of houses built on the banks of the Siyob stream.

According to data, more than 800 million people live in water shortage conditions, and more than 60% of them are not provided with drinking water necessary for human needs. We believe that the reason for this is not only that it is not available in all parts of the earth, but also that it is not used for economic purposes, in agriculture, and in various production processes of industrial enterprises. As a result, large-scale arable land is desertified, and the ecological balance is disturbed and out of control.

Our opinion is confirmed by the fact that more than 2 billion people in more than 40 countries are experiencing water shortages. Most importantly, water is one of the main factors of social and economic well-being and environmental protection of the Central Asian countries where we live. Water shortages are observed in all countries of Central Asia, especially in our republic.

We call water the source of life. Undoubtedly, it is. No crop will grow without water. Faiz and blessing are from water. However, the water of the Zarafshan River, which is the main water source of our region, has been decreasing significantly in recent years. For example, in 2007, its water level during the growing season was 3899 million. meters/cubic meters, in the last year's irrigation season, this amount was 3158 mln. meter/cubic meter. In this year's irrigation season, the volume of water has decreased by 30-35 percent compared to 2008.

The tragedy of Arol, which turned from a unique and beautiful sea into a water body that is drying up and disappearing within a generation, is a clear proof of this. The once flourishing Orolboyi region is turning into a miserable desert today. The information about the fact that the Aral Sea, one of the largest inland water bodies in the world, has a positive effect on the landscape complexes around it, has been fully confirmed as a result of investigations, should be conveyed to students on the basis of examples and presentations. They must know that Amudarya and Syrdarya, which flow into the sea, supply water to about four million hectares of land in Central Asia.

The shortage of water resources, the unusability of irrigated cropland, the sharp reduction of animal and plant life, climate changes, as well as the acceleration of the melting of glaciers in the Pamir and Tianshan mountains, which make up the majority of the water flow of the main rivers in the region, are the causes of the Arol tragedy. It's just a part of the consequences.

To date, air pollution in connection with the purity of water has a bad effect on the ecological purity and quality of agricultural products. prevention of environmental problems that threaten people's health, protection of water, air and soil should be an important task of every intelligent person.

It is necessary to apply the technologies of efficient use of existing water sources, keep accurate accounts of water consumption, target use of drinking water, the exact volume of water consumption for crops and pay more attention to saving. The table below shows the permissible standards of the parts that make up the mineral composition of the studied water bodies.

Table 1. Requirements for the main components of the mineral content of water

Components of the mineral composition of water	Fixed Rate (REM)
Group I (cations)	
Kalsiy (Ca^{2+})	200 mg/l
Natriy (Na^{+})	200 mg/l
Magniy (Mg^{2+})	100 mg/l
2. Anions:	

Gidrokarbonat (HCO_3^-)	1000 mg/l
Sulfat (SO_4^{2-})	500 mg/l
Xlorid (Cl^-)	350 mg/l
Karbonat (CO_3^{2-})	100 mg/l
Ammoniy (NH_4^+)	2,5 mg/l
Anions Total iron (sum of Fe^{2+} and Fe^{3+})	0,3 mg/l
2. Anions:	
Nitrat (NO_3^-)	45 mg/l
Gidrofosfat (HPO_4^{2-})	3,5 mg/l
Nitrit (NO_2^-)	0,1 mg/l

It can be seen from the table that the salts of group I ions (which form the main ions) and which are identified first make the main contribution to the mineral composition. They include: Cl-, CO_3^{2-}, HCO_3- and SO_4^{2-}. Suitable cations for the mentioned anions include K+, Na+, Ca2+ and Mg2+. It is necessary to develop certain knowledge and skills for determining the amount of various ingredients in Samarkand's territorial waters. As an example of this, we cite the changes in the composition of the water body over the years presented in the table below.

Table 2. Analytical monitoring was evaluated on the basis of the results obtained in different years from the Zarafshan water flowing from Ravothoja fortress in Tailoq district. 2020-2021-2022 - December; n=3; $\overline{P}$=0,95

№	December 2020			December 2021			December 2022		
	Ions identified, mg/l	**Sr, %**	**$\Delta\overline{X}$**	**Ions identified, mg/l**	**Sr, %**	**$\Delta\overline{X}$**	**Ions identified, mg/l**	**Sr, %**	**$\Delta\overline{X}$**
1	NO_3^- 3,87	0,67	0,064	NO_3^- 3,41	1,01	0,085	NO_3^- 3,40	0,71	0,060
2	NH_4^+ 0,69	0,94	0,016	NH_4^+ 0,62	0,98	0,015	NH_4^+ 0,67	0,91	0,015
3	SO_4^{2-} 57,2	1,31	1,860	SO_4^{2-} 37,4	1,21	0,030	SO_4^{2-} 33,0	1,24	1,017
4	Cl^- lar 32,1	0,87	0,690	Cl^- lar 31,7	1,07	0,084	Cl^- lar 18,2	1,08	0,488
5	Fe (com.) 0,064	0,16	0,0003	Fe (com.) 0,031	1,24	0,001	Fe (com.) 0,038	1,16	0,001
6	Mineralization 397,4	1,64	16,199	Mineralization 336,0	1,28	10,690	Mineralization 332,1	1,31	10,81
7	pH 7,5			pH 7,4			pH 7,4		
8	General hardness, mg-ekv/l 6,1	1,32	0,531	General hardness, mg-ekv/l 6,0	1,31	0,527	General hardness, mg-ekv/l 6,5	1,34	0,542

Figures 1-4 below show the charts representing the differences between the values of quantitative analytical indicators for the years 2020-2021-2022 based on the results of the table.

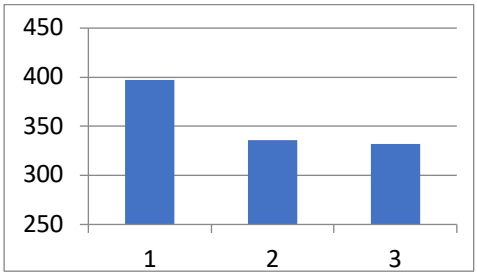

Figure 1. Diagram representing the mineralization of Zarafshan River waters (2020-2021-2022 - December), mg/l.

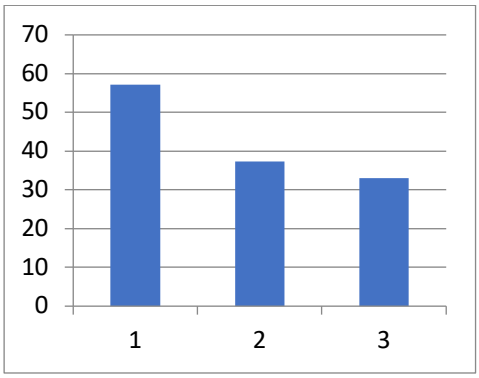

Figure 2. Diagram representing the amount of sulfates in water samples taken from the entrance of the Zarafshan River to the region (December 2020-2021-2022), mg/l.

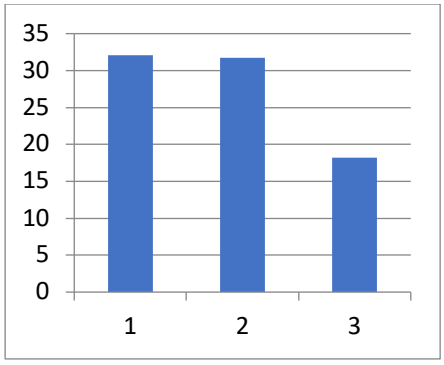

Figure 3. Diagram representing the amount of chlorides in water samples taken from the entrance of the Zarafshon River to the region (December 2020-2021-2022),mg/l.

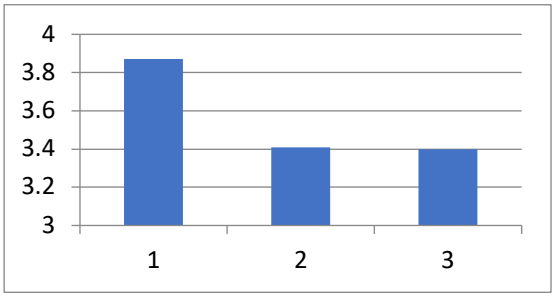

Figure 4. Diagram representing the amount of nitrates in water samples taken from the entrance of the Zarafshan River to the region (December 2020-2021-2022), mg/l.

Evaluation of analytical processes in future civil engineering students of the processes of determining the mineral substances in the soil of irrigated land taken from agricultural farms in Tailoq district using chemical and instrumental methods, as well as learning to work with modern analytical measurement tools it is necessary to enter the main tasks of teaching professors-specialists.

Table 3. Results of determination of mineral substances and analytical indicators in the soil of irrigated land by chemical and instrumental methods.

n=3, $\bar{p}$ =0.95, $\Delta\bar{X}t_{pf}$=4.30, 2022 yil march.

№	Specified quantities	Units of measurement	$\bar{X}$ after watering	$\bar{X}$ before watering	Δ	S	Sr, %	$\Delta\bar{X}$
1	pH		7.200	7.300	0.100	0.009	0.13	0.023
2	NH_4^+	mg/l	1,729	1.722	0.007	0.015	0.91	0,038
3	F^-	mg/l	1,138	1.150	0.012	0.008	0.74	0,021
4	NO_3^-	mg/l	124,82	124.7	0.110	1.396	1.12	3,463
5	Cl^-	mg/l	63,04	62.18	0.860	0.671	1.08	1,665
6	$P_2O_5^{-3}$	mg/l	26,27	26.21	0,060	0.330	1.26	0,819

Assessment of the accuracy of the results obtained using chemical, electrochemical and spectrophotometric analysis methods for the determination of mineral substances and analytical parameters in soil samples taken for inspection based on the random error value and the normal distribution law, metrological using mathematical statistics methods according to GOST 17.1.5.05-85 processed. It can be seen from the table that the minimum and maximum ranges of the value of the relative standard deviation of the calculation are from 0.13 to 1.26%. The reliability values of the obtained results ranged from 0.023 to 3.463. When the soil samples before and after irrigation were examined, the differences between them ranged from 0.007 to 0.860.

The process of training specialists in ecology and nature protection consists of long-lasting stages. From a chemical point of view, they should also know the rules and laws of using atmospheric air, water, chemicals - various fertilizers, pesticides, herbicides, etc.

In the preparation of specialists for the fields of architecture and construction involved in the protection of environmental objects, it is necessary to fully form the concept of ecology and nature protection, which is necessary for every person, in general educational training.

In order to strengthen environmental education, we need to increase our attention to the following points in order to strengthen environmental education based on the above-mentioned points and analytical experiments focused on land and water problems.

- to strengthen the scientific and methodological work related to environmental protection at the university;
- organization of special subjects in the department of environmental and nature protection in the teaching of subjects in the system of chemical and biological sciences;
- paying attention to such things as the introduction of environmental education in all faculties, depending on the field of specialization, is of great importance in the training of modern engineers today.

REFERENCES:

1. Abduqadirov A., Kholmatova Z. Effective use of water resources. // Young people with intellectual potential in the integration of education, science and production are an important factor of the country's development. XIII Resp. ilm.-practice. conf. mater. Part IV. - Samarkand: SamDAQU publication. 2016. p. 23-24
2. Umarov N.S. Rational use of land and water resources. // Young people with intellectual potential in the integration of education, science and production are an important factor of the country's development. XIII Resp. ilm.-practice. conf. mater. Part IV. - Samarkand: SamDAQU publication. 2016. p. 33-35
3. Ruziyev E.A., Eshankulov Z.A., Nurboyev K.I., Ruziyev J.E. The role of analytical methods in the monitoring of underground and surface water. // "Digital technologies, innovative ideas and

prospects for their application in the field of production". International practical science conference. - Andijan: 2021. p. 173-176.

4. Ruziyev E.A., Ruziyev J.E., Roziyev Yo.A. Analytical assessment of radioactivity and chemical composition of drinking water. // Innovative science and education. International science. - act. a collection of magazine articles. -Kazakhstan: 2021. p. 21-23.
5. J.E. Ruziyev, M.Q. Abdihamidov, E.A. Ruziyev. Regarding ecoanalytical monitoring of drinking water. // "The role of chemistry in the economic development of Uzbekistan". Resp. science - act. anj. mater. - Samarkand: 2018. p. 15-17.6. Ruziyev J.E., Haydarova Ch.Y., Ruziyeva D.T., Uralov SH., Ruziyev E.A., Yer osti va yer usti suvlarining elektrokimyoviy analizi. // Miasto przysztosci research journal from Poland. –Polsha: 2023. b. 208-211.
6. Ruziyeva D.T., Haydarova Ch.Y., Salimova Sh.R., Uralov Sh.O. Suv ekologiyasi va shahar oqova suvlarining xususiyatlari. // Eurasian journal of medical and natural sciences. –Chexiya 2023. b. 46-49.