RESULTS OF THE HYGIENIC ASSESSMENT OF THE QUALITY OF DRINKING WATER (ON THE EXAMPLE OF ALMAZAR DISTRICT OF TASHKENT CITY)

Salomova F.I.[1], Turgunov S.T.[2], Nurmatov B.K.[3], Istamov A.I.[4] (Republic of Uzbekistan) Email: Salomova59@scientifictext.ru

[1]Salomova Feruza Ibodullayevna - Doctor of medical sciences, Associate Professor, Head of Department,
DEPARTMENT OF ENVIRONMENTAL HYGIENE;
[2] Turgunov Saidakhror Turob ogli – Master;
[3]Nurmatov Bakhriddin Qoziboy ogli – Master;
[4]Istamov Asom Isomovich – Master,
ENVIRONMENTAL AND HUMAN HEALTH,
TASHKENT MEDICAL ACADEMY,
TASHKENT, REPUBLIC OF UZBEKISTAN

Abstract: *in article it is said that nowadays, the economy of our Republic of Uzbekistan is growing, and the number of industrial enterprises and vehicles are increasing. Various hazardous and dangerous wastes generated from industrial plants are polluting not only the atmosphere air, but also the negative effects to open and closed water supplies. As a result, the quality of drinking water supply has become a topical issue. The bacteriological data of the water analyzed during the years showed that the results of the laboratory analysis were partly differed from the standard. Results of the laboratory analysis reached state standard for organoleptic, physical and chemical indicators of the drinking water, but bacteriological these waters analysed within these years showed that results of the laboratory analysis partially differed from norms.*

Keywords: *State standard, pure drinking water, water supply, pollution level, ecological and hygienic assessment, organoleptic indicators, physical and chemical parameters, Sanitary requirement and rules (San R and R), Maximum permissible concentration (MPC).*

РЕЗУЛЬТАТЫ ГИГИЕНИЧЕСКОЙ ОЦЕНКИ КАЧЕСТВА ПИТЬЕВОЙ ВОДЫ (НА ПРИМЕРЕ АЛМАЗАРСКОГО РАЙОНА Г. ТАШКЕНТА)

Саломова Ф.И.[1], Тургунов С.Т.[2], Нурматов Б.К.[3], Истамов А.И.[4] (Республика Узбекистан)

[1]Саломова Феруза Ибодуллаевна – доктор медицинских наук, доцент, заведующая кафедрой,
кафедра гигиены окружающей среды;

[2]Тургунов Саидахрор Туроб угли – магистр;
[3]Нурматов Бахриддин Кузибой угли – магистр;
[4]Истамов Асом Исомович - магистр,
специальность: окружающая среда и здоровье человека,
Ташкентская медицинская академия,
г. Ташкент, Республика Узбекистан

Аннотация: *в статье говорится, что в наше время экономика Республики Узбекистан растет и число промышленных предприятий и транспортных средств увеличивается. Различные опасные выбросы и отходы, сгенерированные от промышленных предприятий, загрязняют не только атмосферный воздух, но также и отрицательно сказывается на состоянии открытых и закрытых водоисточников. В результате качество питьевой воды стало актуальной проблемой. Результаты лабораторного анализа достигли государственного стандарта для органолептических, физических и химических показателей питьевой воды, но бактериологические данные воды, проанализированной в течение данных лет, показали, что результаты лабораторного анализа частично отличались от норм.*
Ключевые слова: *государственный стандарт, чистая питьевая вода, водоснабжение, уровень загрязнения, экологическая и гигиеническая оценка, органолептические индикаторы, физические и химические параметры, Санитарные правила и нормы (СанПиН), предельно допустимая концентрация (ПДК).*

Removal of pollutants from environment is one of the main economic and social problems of today and requires, first of all, the health of the population, the need for the population to meet industrial needs and the rational use of natural resources. To address these issues, not just the need for a technique, but also its relation to natureshould be considered. Therefore, in the coming years, many businesses will have to rethink of their working methods and goals in the future. In the future, the main tasks in the public utility sector will be to supply population with drinking water fully, to meet the communal needs of cities and settlements at the expense of centralized systems that are characterized by the need and types of water supply.

Test materials and methods:

In Uzbekistan, a strong law on the protection of water supply sources has been developed and put into practice. The Law of the Republic of Uzbekistan “On Sanitation and Epidemiological Surveillance of the Population”, State standard 950:2011 “Drinking water. Hygienic Water Quality and Controls for Water Quality”, State Standard 951:2000 “Sources of centralized household-drinking water supply. Sanitary and Hygienic, Technical Requirements and Selection

Policies", SanR and R 0172-04 "Hygienic requirements for the protection of surface water resources in the territory of the Republic of Uzbekistan", SanR and R 0173-04 "Sanitary and hygienic requirements for the protection of groundwater from pollution in the context of Uzbekistan" are used to estimatewater supply of population ecologically and hygienically [1, 2, 3, 4]. As a test object, the water supply of Almazar district of Tashkent city in 2014-2016 was taken and organoleptic, physical, chemical and bacteriological parameters of drinking water were hygienically estimated. Organoleptic indicators: the smell of drinking water, taste, clarity, turbidity; physical parameters: total hardness, dry residue, colour; Chemicals containing drinking water: ammonia, nitrite, nitrate, sulphates, chlorides, iron, lead, zinc, copper, polyphosphates, fluorine, cadmium, aluminum, residual chlorine, formaldehyde, manganese; bacteriological (microbiological) indicators were given hygienic evaluation of total number of microbes (TNM), coly index, number of bowel hemorrhage (NBH) and coly-fag.

Results and discussions:

In total, 1127 samples (320 samples in 2014, 409 samples in 2015 and 398 samples in 2016) were taken for the analysis of organoleptic, physical and chemical parameters of drinking water in Almazar district (2014-2016) and compared to State standards 950-2011, then hygienically estimated.. When evaluating the scent, taste, clarity, susceptibility, ammonia, nitrite, nitrate, sulphates, chlorides, and iron content of all the tests from 2014-2016, it was determined that all of these hygienic requirements were met. Also, for the purpose of determining the amount of lead, zinc and mercury in the water, samples were taken 11 times in 2014, 14 times in 2015 and 2016, and the results of the analysis showed that the above-mentioned substances did not exceed the permissible concentration (PC).

Everybody knows that the amount offluorine in the water is of great importance to the body. For fluorine in drinking water the PC is 0,7-1,2 mg/l. If the amount of fluorine in the water is lower than 0.7 mg/l, it will lead to pathological changes in the population (especially in children). The low fluorine content can cause the mineralization of the bones, such as osteomyelitis in children, and the development of osteoporosis in adults.

More than 1,5 mg/l of water in the water can lead to calcium and iodine deficiency disorders, appearance of black spots on the teeth, perforation, and eventually the lost, plus development of other diseases. During the years investigated for fluorine content analysis in Almazar district, a total of 302 tests (128 in 2014, 142 in 2015, 32 in 2016) all met hygienic requirements.

The analysis of the quality of drinking water for the last 3 years has resulted in the following results: the tests for identifying the total bacteriological pollution levels of 786, 809 and 877 drinking water in 2014, 2015 and 2016 were obtained.

The results of bacteriological pollution levels for 2014, 2015 and 2016 are summarized in the table below.

Table 1. Bacteriological indicators of drinking water in Almazar district of Tashkent city for the last 3 years (2014-2016)

№	Year	TNM	Coly index			NBH		Number of colyfag			Number of samples taken from pathogenic bacteria		Total number of sample	Number of exams
				+	%		+		+	%		+		
1.	2014	786	786	22	2.8	4					2		788	1578
2.	2015	809	809	14	1.7			30	16	5			839	1648
3.	2016	877	877	18	2			21	21	100	2		900	1777

In 2014, the sampling rate was higher than the permitted limit of 22 (2,8%) of 786 tests, then was 14 (1,7%) and 18 (2%) in 2015 and 2016 respectively. The increase was determined in 2 cases of pathogenic bacterial examinations, in particular, samples in the 2014 and 2016. Only 4 cases (2014) showed positive results for the water test conducted for assessment of pollution. No such cases were observed in the years 2015 and 2016.

Conclusions:

1. Results of the laboratory analysis reached the State standard for organoleptic and physical and chemical characteristics of drinking water 950: 2011 “Drinking water. Water quality and hygienic requirements and controls” by organoleptic, physical and chemical indexes. The protecting system and the introduction of new technologies in treatment plants testify to these positive results.

2. The bacteriological data of the water analyzed during the years showed that the results of the laboratory analysis were partly differed from the standard. In 2014, the quality of drinking water was slightly higher than in 2015 and 2016 by bacteriological pollution. In other words, in 2014, 2,8% of the total sample samples were polluted, whereas in 2015 and 2016 these figures were 1,7 and 2% respectively. The shifts from standards in the bacteriological analysis of drinking

water indicate that bacteriological treatment of water supply, that is, the need to improve the methods of disinfection.

References / Список литературы

1. State Standard 950: 2011 “Drinking water. Hygienic Water Quality and Controls for Water Quality” (2011).
2. State Standard 951: 2000 “Sources of centralized household and drinking water supply. Hygienic, Technical Requirements and Selection Policies” (2000).
3. SanR and R №0172-04 “Hygienic requirements for the protection of surface water resources in the territory of the Republic of Uzbekistan” (2004).
4. SanR and R №0173-04 “Sanitary and hygienic requirements for the protection of groundwater from pollution in the context of Uzbekistan” (2004).