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The rates of communal hygiene in some regions of Karaganda and positive and negative directions of them to human body

The rates of regional soil, air, water of communal hygiene according to Karaganda region are analyzed, reasons of deviation from allowed concentration in some regions and research methods of them are considered in this article. For example, percentage rates of communal hygiene in Karaganda city and regions are analyzed. Negative factors influencing on human body are researched in laboratories by means of special researches and through special order. We have taken a lot of physical-chemical rates together with sanitary-epidemiological station. The aim of work is the condition of communal hygiene in regions and some information which influence on human body are given. Except the structure of harmful substances in evaluation tendency of alteration of atmospheric air in hygienic point, influence of them to human health, knowing their concentration, defining this or that ingredients are the influence of intensity. The concentration of atmospheric pollutants relates to these factors: volume of extraction, length of extraction, distance of extraction, meteorological terms (direction, speed of wind, humidity, atmospheric pressure, temperature pressure, according to solar radiation). Defining the pollution of atmospheric air through laboratory observations was conducted in regional SES according to state order. Analysis was taken from 5101 research objects and regions to research. The highness of harmful substances from permitted concentration comprises 6.3 %, it has been proved that it is lower than the analysis in 2016 (2016 — 8.1 %).

Keywords: extremely-allowed concentrations (EAC), sanitary protecting regions, implementing regional nomenclatures, anthropogenic intensive level AIL, LLC, BRIS, SESU, OStRK, physical-chemical rates, World Health Organization (WHO).

The weakness of human health and being ill should be considered as negative answer given to negative influences and full non-adaption of organism to environment. According to definition of World Health Organization (WHO), health is not having disease, it is a full physical, psychological and social convenience. According to the calculation of scientists, health condition of human beings 50–52 % relates to life style, 20–25 % relates to the factors of inheritance, 18–20 % relates to environment conditions and 7–12 % relates to the level of health protection sphere. Anthropogenic factors were not occurred before, it arises new technogenic diseases. In this case, unified works have been done in communal hygiene spheres influencing on human health after ecology together with the sanitary hygiene centers of Karaganda region. In general, water, soil, air problems are considered widely here [1].

When the rates of harmfulness related to 1 and 2 classes of danger are found while providing with water source, mixture of their amount, relation of their limited rates should not be increased 1. Some demands and examples are put which should be paid attention. Their calculation is conducted according to formula: here C_1, C_2-C_p — concentrations of separate chemical substances. Danger of 1 and 2 class: in fact and permitted. MEST 2874 water object is divided into 3 class according to appropriate level spheres of water and treatment before supplying with water as suitable one.

Water cleaning scheme for each concrete water source and technological researches for suitable reagents are affirmed in basic and working experiences. Salted water with definite classes which proves the quality of water from water sources should pass an increase of fluorine, also special methods of sanitary-epidemiological services, technological and hygienic treatment. The capacity of water pipe relates to water volume taken from water sources in local regions and loss of much water. Water source and devices dedicated for taking water should be protected from pollution through sanitary protecting region. It should be appropriate for SPR projects affirmed by the Ministry of Health protection and using of them [2].

This relation is related to polluting substances of atmospheric air to many industrial regions: carbonic oxide about 50 %, sulfuric oxide — 6–8 %, hydrocarbon — 2–5 %. Ammonia, sulfuric oxide, sulfuric carbon, aldehyde, chloroorganic mixtures, fluorides relate to polluting substances.

These terms should be implemented in spreading and changing of the places of mixtures in atmospheric air. For example, state planning measures related to protecting atmospheric air, planning and building of local regions where the citizens are located, development of recreational zones, rational location of houses and industrial offices, making different informative and adequate criteria while evaluating the pollution of at-

atmospheric air, defining pollution level of pollution sources of general atmospheric air pollution in definite region, making calculation map of concentration in different atmospheric pollutions, assuming atmospheric air quality, comprising model system of monitoring to atmospheric air condition, warning negative influence of harmful substances to human health [3].

Except the structure of harmful substances in evaluation tendency of alteration of atmospheric air in hygienic point, influence of them to human health, knowing their concentration, defining this or that ingredients are the influence of intensity. The concentration of atmospheric pollutants relates to these factors: volume of extraction, length of extraction, distance of extraction, meteorological terms (direction, speed of wind, humidity, atmospheric pressure, temperature pressure, according to solar radiation).

The volume of harmful substances which enters atmospheric air is different in different regions, measures accepted according to intensive type and shortening of anthropogenic conditions. It is defined according to perennial observation: harmful substances are a lot in air pool while there is much expense.

The next tendencies of struggle against to the pollution of soil can be shown: 1) development of the methods of destroying remnants; 2) development and including of safety of pesticides and fertilizer; 3) organizing and conducting measures directed to the weakness of soil; 4) conducting monitoring to the condition of soil surface; 5) using natural resources in right and accurate way; 6) controlling the conduction of regularity of protecting nature [4].

The planned sanitary-technical measures were organized with the aim of keeping health in local regions. Collecting hard and liquid remnants, temporary keeping, disinfection works were conducted.

Methods and objects of research

We have taken some rates of communal hygiene of Karaganda region considering above given principles. Laboratory is located in special supplied building. Also, laboratory is provided with high calculation equipments of sanitary-epidemiological service union, it was affirmed with the order of state RK No. 11 from 24.01.2011 by sanitarian head doctor. Used equipments are checked in time and daily. After some checking based on special affirmed acts with affirmed equipments related to OStRK, researches are conducted according to normative law acts. While calculating communal waters, allowed concentrates are given with basic rates in Tables 1, 2 given below [5, 6].

Table 1

The rates of water source quality providing water are given in the table

Names of the rates	The rates of water source quality according to class		
	1	2	3
Sources under water. Filthiness, mg/dm ³ which is not increased	1.5	1.5	10.0
Colour, degree, which is not increased	20	2	50
Rate of hydrogen (pH)	6–9	6–9	6–9
Ferrum, (Fe) mg/dm ³ , which is not increased	0.3	10	20
Manganese (mg) which is not increased	0.1	1	2
Hydrogen sulfide (H ₂ S) mg/dm ³ which is not increased	-	3	10
Permanganate oxidation, mg/ dm ³	2	5	1.5
General number of intestine microbes (BRIS) which is not increased 1dm ³	3	100	1000
Sources of phytoplankton. Filthiness mg/dm ³	20	1500	10000
Colour, degree, which is not increased mg/dm ³	35	120	200
Smell from 20 which is not increased 60 °C	2	3	4
Rate of hydrogen (PH)	6.5–8.5	6.5–8.5	6.5–8.5
Ferrum, (Fe) mg/dm ³ , which is not increased	1	3	5
Manganese (mg) mg/dm ³ which is not increased	0.1	1.0	2.0
Phytoplankton, mg/dm ³ which is not increased kl-sm ³	1	5	50
Permanganate oxidation, mg/dm ³ which is not increased	7	15	20
Full BLC mg/O ₂ /dm ³ which is not increased	3	5	7
Number of sticks as lactose (LLC) 1dm ³ which is not increased	1000	10000	50000

According to standard scale it should not be increased 1.5 ml/l (related to kaolin). The methods of defining transparency are used, it was used before, but it is not used now in sanitary control.

The rates of defining transparency of communal waters

Smell (score)	Evaluated according to the scale of 6-score
0	It is not acceptable
1	Very weak
2	Weak — does not pay attention, but this one can be noticed
3	Visible — easy found
4	Concretely visible, negative, non-drinkable
5	Very strong (it is not impossible to drink water)

The works which have been done together with SES gave its basic rates related to Karaganda region. We have taken the results of implemented and planned work 97.1 % (2017 — 74.2 %). We analyzed the results of the plan of Bukhar-Zhyrau and Osakarovka regions in regional level. According to general region, while researching 91.6 % (2017 — 89.9 %) 101052 of water, soil, separate qualities of disinfected drinkable water, soil researches — 0.8 % (2017 — 0.85), the rates of researches of disinfected structures — 2.5 % (2017 — 2.0 %), atmospheric air analysis — 5.1 % (2017 — 7.4 %) were defined and analyzed.

Researched regional nomenclatures showed 97.5 % (2017 — 93.1 %), below water structures were not checked according to 28 rates. Waters in swimming pools (14), centers providing with drinkable water which are not centralized (water wells which do not have electric source, wells, captures, rills — (10) and others (4). Because of far distance of regional regions some nomenclatures which must be researched have been still considering. Because, the analytical rates of these regions to percentage level in summer conducted researches according to Aktogai region — 71.4 % (2017 — 71.6 %), Karazhal city — 86.8 % (2017 — 100 %), Satpaev city — 88.1 % (2017 — 100 %).

Analytical work and result

While researching percentage rates of using modern equipments showed 54.9 %, that is it comprises 55.4 % in comparison with 2017, the usage of modern methods in the research is conducted in the lowest level from regional level in Karazhal city — 41.8 % (2017—49.4 %), Pryozerk city — 34.2 % (2017 — 42.2 %), Ulytau region — 28.6 % (2017 — 52.0 %). The analysis was conducted traditionally because of non-sufficient equipments at present in the centers of these cities and regions. But, the traditional results made the best analytical evaluating conclusion. The analysis showed the positive result even the work was conducted for a long time. The basic table of these rates are proposed below. The allowed higher or lower concentration can be noticed (ELC).

Table 3

The results of laboratory researches

Name of the territories	2016			2017		
	Implemented researches	Higher ELC	%	Implemented researches	Higher ELC	%
1	2	3	4	5	6	7
F RSE on the REJ «NCE» on KR	18522	319	1.7	19492	260	1.3
Abai	4384	2		5275	6	0.1
Aktogai	2289	2		1446	11	0.8
Balkhash	5888	14	0.2	9368	21	0.2
Bukhar-Zhyrau	1671	12	0.7	3598	37	1.1
Zhana-Arka	2610	9	0.3	4160	51	1.2
Zhezkazgan	9527	666	7.0	9667	296	3.1
Karazhal	3110	234	7.5	1903	131	6.9
Karkaralinskiy	2221	19	0.9	2530	18	0.7
Nurinskiy	4819	26	0.5	4212	26	0.6
Osakarovskiy	1412	9	0.6	2932	40	1.4
Pryozerk	3957	0	0	4057	1	
Saran	4288	2		5100	0	0
Satpaev	3822	0	0	4502	0	0
Temirtau	14498	423	2.9	14350	290	2.0

Continuation of Table 3

1	2	3	4	5	6	7
Ulytau	1225	1		636	0	0
Shakhtinsk	6688	116	1.7	5169	107	2.1
Shet	3419	0	0	2655	0	0
Total	94350	1854	2.0	101052	1295	1.3

The Table 3 was comprised by relying on the analysis of definitions and researches of communal hygiene in some regions and cities related to Karaganda city in the summer of 2016–2017. The basic aim of the work was to define the deviation of communal hygiene from allowed limit according to region.

Conclusion

The rate of research result related to region is 1.3 % (2017 — 2.0 %), and there is no basic result or non right result in separate Shet, Ulytau regions and Satpaev, Priozersk, Saran cities. We conducted the analysis of defining positive rates of researches at highest level from region level in Karazhal, Zhezkazgan, Temirtau, Schakhtinsk cities. Organoleptic and physical-chemical rates of water, that is taste, colour, general insipidity, the rates of chlorides, sulfides and dry remnants of ferrum.

Defining the pollution of atmospheric air through laboratory observations was conducted in regional SES according to state order. Analysis was taken from 5101 research objects and regions to research. The highness of harmful substances from permitted concentration comprises 6.3 %, it has been proved that it is lower than the analysis in 2016 (2016 — 8.1 %). Decrease of share weight comprised 2.7 % because of carbon oxide, it happened because there are no laboratories to observe the gasification of auto magistracy. Especially it was observed harmful air level of Temirtau was decreased than the last year. These rates are defining it: ammonia rate in air is decreased from 26.3 % to 9.8 % in 2017. It is defined that planned substances were decreased from 21.1 % to 19.2 % and phenol comprises 23.5 %. The basic reason of this is the continuous work of LP «ТЕМК» enterprise.

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Қарағанды облысының кейбір аймақтарындағы коммуналдық гигиенаның көрсеткіштері және оның адам ағзасына әкелетін оң және теріс бағыттары

Мақалада Қарағанды облысы бойынша коммуналдық гигиенаның аумақтық топырақ, ауа, судың көрсеткіштері сараланып, кейбір аймақтардағы рұқсат етілген концентрациядан ауытқушылықтардың себептері мен оларды зерттеу әдістері қарастырылған. Мысалға Қарағанды облысы мен қалаларындағы коммуналдық гигиенаның пайыздық көрсеткіштері алынған. Адам ағзасына әкелетін кері факторлары да арнайы зерттеулер арқылы қала ауқымдағы зертханаларында арнайы тапсырыс бойынша анықталған. Санитарлы-эпидемиологиялық станциямен бірлесе отырып, көптеген физика-химиялық көрсеткіштер нәтижесіне көз жеткізіп отырмыз. Жұмыстың мақсаты облыс аумағындағы коммуналдық гигиена жағдайы және оның адам ағзасына әкелетін кейбір мәліметтер көрсетілген. Атмосфералық ауаның өзгеруін гигиеналық тұрғыда бағалау тенденциясында зиянды заттардың

құрамынан басқа олардың әртүрлі әсерлердің адам денсаулығына әсері, олардың концентрациясын білу, сол немесе басқа ингредиенттердің анықтау қарқындылығы әсері болып табылады. Атмосфералық ластаушылардың концентрациясы мына факторларға байланысты шығарыс көлемі, шығарыс ұзындығы, шығарыс көзінің арақашықтығы метеорологиялық шарттарға (бағыт, желдің жылдамдығы, ылғалдылық, атмосфералық қысым, температуралық қысым, күн радиациясына байланысты). Атмосфералық ауаның ластануын зертханалық бақылаулар арқылы анықтау мемлекеттік тапсырыс бойынша облыстық СЭС-да бірлесіп жүргізілді. Зерттеуге 5101 зерттеу нысандары мен аудандарынан сараптама алынды. Зиянды заттардың рұқсат етілген концентрациядан жоғары болуы 6,3 % құраса, ол, 2016 жылғы сараптамаға қарағанда, төмен екенін дәлелденді (2016 ж. — 8,1 %).

Кілт сөздер: шекті рұқсат концентрациясы, санитарлы қорғалатын аймақтар, аймақтың орындалу номенклатурасы, антропогенді қарқынды деңгей, лактозаның шекті концентрациясы, ішек таяқшасының бактериологиялық көрсеткіші, СЭС, МЕСТ, физика-химиялық көрсеткіштер, Одақтас дәрігерлер ұйымы.

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Коммунально-гигиенические показатели некоторых регионов Карагандинской области и их положительное и отрицательное влияние на организм человека

В статье проанализированы коммунально-гигиенические показатели почвы, воздуха, воды Карагандинской области и в городских регионах, а также их предельно допустимые концентрации. Проведен анализ гигиенических показателей городов Карагандинской области. Проведено лабораторное исследование отрицательного действия на организм человека факторов городской среды. Совместно с санитарно-эпидемиологической станцией изучено большое количество физико-химических показателей. Целью работы является изучение влияния гигиенических показателей на здоровье населения. В контексте гигиенической оценки изменения атмосферного воздуха и воздействия на здоровье человека вредных веществ является необходимым обнаружение в воздухе различных ингредиентов, определение их концентрации. Концентрация атмосферных загрязнителей зависит от таких факторов, как количество выбросов, длина излучения, расстояние от источника и метеорологические условия (направление, скорость ветра, влажность, атмосферное давление, температурное давление, солнечное излучение). Определение загрязнения атмосферного воздуха проводилось по государственному заказу лабораторными исследованиями совместно с областной СЭС. Было проведено исследование 5101 объектов. Процент вредных веществ, превышающих допустимую концентрацию, составил 6,3 %, что оказалось ниже, чем в 2016 г. (8,1 % — в 2016 г.).

Ключевые слова: предельно допустимые концентрации, санитарно-охраняемые регионы, выполнение региональных номенклатур, антропогенно-интенсивный уровень, предельно допустимые концентрации лактозы, бактериологические показатели кишечной палочки, СЭС, ГОСТ, физико-химические показатели, Всесоюзная организация врачей.

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