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IMPACT OF DANGEROUS ENVIRONMENTAL AND HYGIENIC REASONS ON CHILDREN'S HEALTH

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ABSTRACT

Children's health is characterized by a decrease in the resistance and sensitivity of the environment to harmful chemical effects. The body and organs of children are closely related to the causes of the external environment and affect all their functions physical and chemical causes of the external environment. Many scientists who deal with population urbanization and environmental and hygienic conditions believe that studying the relationship between environmental causes and children's health is very important.

The purpose of the study: to improve the organization of preventive medical measures aimed at reducing the level of morbidity and indicators of children under 6 years of age.

Materials and methods studied: Official medical statistics and service reports of polyclinic organizations of the Turkestan regional health Department for 2016-2018 were obtained. The unit of the study was taken health indicators of children aged 0 to 6 years with the detection of chronic diseases in an outpatient clinic. Research bases are urban outpatient organizations.

Results: The level of chronic diseases of children registered in polyclinic organizations is estimated by correlation examination in connection with different degrees of risk formation, depending on social and environmental conditions.

Conclusion: The influence of environmental and hygienic risk factors on children's health has been proved in the course of the study.

Keywords: preschool children, health indicators, environmental and hygienic reasons, harmful factors

INTRODUCTION

Among the reasons that threaten health, a special place is occupied by sanitary and environmental reasons [1,17,18]. Research conducted by scientists in this area leads to a deterioration in children's health indicators, which is caused by socio-economic decline and unfavorable environmental and hygienic problems in residential areas. A high degree of environmental contamination with chemical pollutants leads to a sharp deterioration of children's resistance to the effects of pathological causes[3,19-21].

The causes of socio-economic stress especially reduce the nutrition of children and put pressure on the activity of the nervous system. The most significant vital feature is the deviation of the normal functioning of the body, which leads to acute diseases and chronic non-epidemic pathology[2-5,35]. Severe service disorders and injuries cause the final disability of children.

Restricts intervention in the educational process,receives professional education, and slows down labor intervention. The activity of measures taken against threats of a socio-hygienic and chemical-biological nature that reduce the health indicators of the population has been reduced [3,8,34]. To solve this problem, it is necessary to develop comprehensive programs, train qualified specialists, and use special technical engineering devices and equipment[6,32,33]. All of these are measures that require large amounts of money and are aimed at maximizing the use of the state material and technical Fund. The main thing is to improve the health of children of this age group, it is necessary to study the main risks that affect their health, to determine the degree of danger. correlation and regression relationships between dangerous causes and pathology of children are identified [7-11,29].

Children are restricted for more reason than adults for migrating around the city [12,13,15]. They are more tied to the residential territories where they live, or to residential territories. In this area, students who do not have occupational hazards are exposed to the urban impact of the external environment not only in the pre - and postnatal period, but also observe that they are at risk both in preschool and preschool age[16,27,28].

MATERIALS AND METHODS

Official medical statistics and service reports of polyclinic organizations of the Turkestan regional health Department for 2016-2018 were obtained. The unit of the study was taken health indicators of children aged 0 to 6 years with the detection of chronic diseases in an outpatient clinic. Research bases are urban outpatient organizations.

The existing ecological and hygienic conditions in the residential areas of the city of Shymkent do not meet the hygienic requirements. Its most pronounced manifestations are the degree of atmospheric air pollution with chemical pollutants. Violations of environmental and hygienic conditions lead to deterioration of children's health. The health status of children living in residential areas contaminated with chemical pollutants shows that the atmospheric air is 1.2 times lower than the health of children living in areas not contaminated with chemical pollutants.

According to the environmental and hygienic data developed in the compared territories of the city of Shymkent over the past three years, the main pollutants that pollute the city's atmospheric air are carbon dioxide, nitrogen oxide, a mixture of coal water, formaldehyde, acetone, and non-ferrous metals[22,30,31]. In the South-Western territory of the city (lead plant), a high concentration of heavy metals (lead, zinc to a normal value of 2.1 times) was detected in the atmospheric air, and in the South-Eastern zone (oil refinery), the concentration of carbon waters (benzene, toluene, formaldehyde, benzapyrene) was higher than normal (2.9 times) (table 1).

Table 1. average annual concentrations of the main chemical elements that pollute the air in clean and polluted residential areas of the compared city (according to data from 2016-2018))

№	Chemicals, in mg/m³	Maximum permissible concentration limit	Comparable residential areas of the city								
			In South – East (1 residential area with air pollution)			South-West (2 residential areas with polluted air)			North-East (relatively clean residential area with atmospheric air)		
			the maximum level of concentration	average annual concentration level	exceeding the maximum permissible concentration level (times)	the maximum level of concentration	average annual concentration level	exceeding the maximum permissible concentration level (times)	the maximum level of concentration	average annual concentration level	exceeding the maximum permissible concentration level (times)
1	2	3	4	5	6	7	8	9	10	11	12
1	lead	0,003	0,001	0,002	>	0,0065	0,0059	<2,1	0,0011	0,00098	>
2	Production dust	0,04	0,08	0,08	<2	0,163	0,13	<4	0,05	0,03	<
3	Sulfuric acid	0,3	0,29	0,24	>	0,50	0,49	<1,6	0,292	0,087	>
4	Ammonia	0,03	0,09	0,08	<	0,12	0,05	<	0,03	0,004	>
5	Sulphur dioxide	0,5	0,12	0,08	>	0,18	0,07	>	0,08	0,015	>
1	2	3	4	5	6	7	8	9	10	11	12
6	Monoxide	3	3,7	3,1	<	1,3	1,2	>	2,1	1,9	>
7	Mixtures of carbohydrates, including:	30	89,4	78,8	< 2,9	62,5	55,7	<	42,9	27,1	>
8	Formaldehyde	0,05	0,005	0,004	>	0,007	0,005	>	0,0019	0,0002	>
9	Phenol	0,004	0,009	0,008	<	0,007	0,003	>	0,004	0,002	=
10	Styrene	0,004	0,008	0,005	<	0,004	0,001	>	0,004	0,002	=
11	Benzene	0,11	0,81	0,57	<	0,59	0,41	<	0,09	0,04	>
12	Zinc	0,13	0,13	0,09	>	0,44	0,27	<2	0,03	0,01	>
13	Copper	0,23	0,22	0,17	>	0,51	0,34	<	0,13	0,09	>
14	Manganese	0,13	0,14	0,11	<	0,27	0,23	<	0,09	0,04	>
15	Chrome	0,14	0,11	0,10	>	0,51	0,48	<	0,09	0,05	>

The current ecological-hygienic situation in the South-Western areas of the city due to the fact that the accumulated on-site lead smelter waste are outdoors and with the wind the air and the water, and the concentration of carbon waters on the South-Eastern areas of the city above the normal level of hygiene is the cause of redistribution of the coal water into the air acting on the territory of the refinery. According to the results of the social and hygienic survey, the level of air pollution in the South-Western residential area significantly worsened the health indicators of children and increased their incidence by 15.7%.

And air pollution on the territory of an oil refinery in the South-East will increase the health of children, including the incidence of diseases by 13.5%. Thus, based on the data obtained in the course of scientific research, it is established that the main dangerous causes of environmental pollution and increased morbidity of

children are heavy metals and coal water. In many ways, correlation analysis and regression analysis have shown that chemical pollutants are closely related to each other. Therefore, their harmful effects on the body of children formed very high.

To study the influence of ambient air on children's health, we selected three cities of Shymkent. There are points of social and hygienic monitoring of environmental objects on these territories. These include residential areas in the North-West, South-West, and North-East. The composition of the atmospheric air of these three territories was formed by the composition and level of chemical pollutants that occur with each other in their composition.

And to identify pathological changes caused by exposure to polluted air in children's health, we used the copy-match method. This method is used to select the correspondence of each object under study in each territory. Many of the attributes of each item must correspond to those of the residents located on the next territory.

The law on sanitary rules and regulations adopted by the Ministry of the Republic of Kazakhstan was applied to determine the hygienic Characteristics of atmospheric air. The main method of regulating the quality of atmospheric air in a residential area is applied within its hygienic norm or a limited level of concentration of polluting chemical octanes in the atmospheric air. To prevent health problems in residential areas accepts.

In order to identify the impact of chemical pollutants released from the manufacturing industry on children's health, 450 atmospheric air tests were obtained in each territory. It is established that the first atmospheric air is concentrated in the air composition in a polluted residential area above the maximum hygienic maximum permissible concentrations (MPC-MPC) of trace elements lead and zinc. And the second atmospheric air is concentrated in the air of the polluted residential area at a level higher than the maximum permissible concentrations of carbohydrates.

Results: in various residential ecological zones of the city, quantitative and qualitative determination of the influence of risk factors on the dynamics, relative level and formation of the value of the real environment was established.The level, composition and dynamics of the General morbidity of children living in the city of Shymkent with violations of residential ecology were revealed. Zoning of residential areas with environmental violations of the city showed that it has two territories with environmental violations. The South-Eastern part of the city, adjacent to the oil refinery, is located in the I residential residential zone with environmental violations.the South – Western part of the city, where the lead plant is located, was assigned to the II residential territory with environmental violations. Due to the deterioration of the ecological and hygienic situation in residential areas, which are caused by various chemical pollutants released from production facilities, we have studied them broken down into separate territories.

The average level of chronic diseases of the nasal cavity amounted to 23.62 case for environmentally safe areas, and on-site violation of ecology-27.23 event on site I, residential zone, where the refinery is situated and disturbed ecology. In residential zones II with environmental violations (lead plant), 23.62 cases occurred (Fig.1).

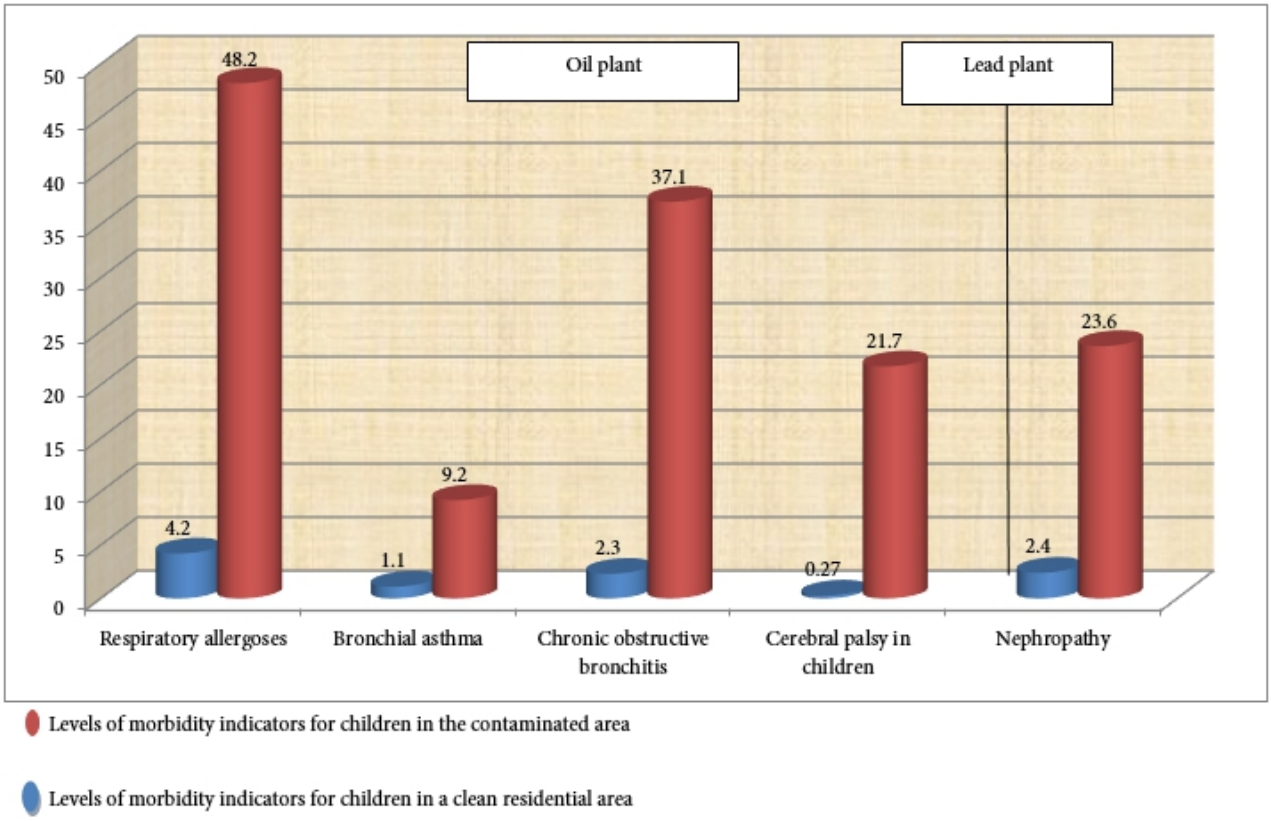

Figure 1. relationship between environmental and hygiene disorders and morbidity

Under the influence of harmful chemical pollutants released into the environment from the oil refinery, there is a dynamic increase in the level of these pathologies in 2010-2016 by 0.02%. And in the territory where the lead plant is located and the environment is deteriorated, its level decreased by 0.2%. Over the past 7 years, the

ecological state of this territory has been gradually improving. The main reason for this is the closure of the lead plant. But the presence of waste released from the plant in an open area leads to an excess of the normal amount of chemical pollutants on environmental objects. Due to the weak ecological and hygienic situation, there is a violation of the main functions of the child's body. To determine the depth of this condition, it is necessary to determine the dynamics of health indicators. This indicator determines long - term changes in children's health. And the increase in the incidence rate in 2016-2018 from 23.47% to 23.68% is due to the deterioration of the environmental situation. The constant high level of allergic rhinitis in the territories of the megalopolis indicates the need to strengthen the fight against this dangerous cause. The average incidence of children in this nosology in an ecologically undisturbed area of environmental objects was 69.12±5.46%.

On the territory of the second unfavorable ecology of the megalopolis, it was found that the average incidence of children with allergic rhinitis is 183.4 ± 9.27% or higher. This indicator has been gradually decreasing in recent years. These conditions can be considered the result of a decrease in chemical pollutants entering the environment with the shutdown of the lead plant. But the level of allergic rhinitis formation is slowly decreasing. Thus, its reflection can be considered a collection of waste on the territory of the plant. In the city, the wind releases trace elements of lead, zinc, copper, and iron from the plant's waste into the atmosphere and poses a danger to children's health. Chemical pollutants, especially trace elements of lead and zinc, help to reduce the immunity of the child's body.

Allergic rhinitis can be considered as an indicator that determines the actual violations of the environment. The average level of morbidity in children from disadvantaged zone I was formed at the level of 135.15±1.61%. There is a gradual dynamic increase in the incidence of diseases in the territory of areas with environmental violations. Retrospective study in 2016-2018, the incidence of allergic rhinitis increased by 0.168%. The concentration of the level of hydrocarbons released by the refinery into the atmospheric air can be considered a high degree. Chemical pollutants, such as Benzene, styrene, gasoline, reduce children's immunity, contribute to an increase in the allergic situation. This leads to the occurrence of allergic antigens in the respiratory system of children. Thus, children of the I-th zone with a violation of the sanitary and hygienic state of the atmosphere at a high level become ill with respiratory allergoses. During the study period, the incidence of respiratory allergoses in children in territories with environmental disorders reached 3.19±0.29% per 1000 children, and the incidence of respiratory allergoses in the first territory with an unfavorable environment-48.1±3.39%. In particular, the level of morbidity of children in the I-th zone with environmental violations was 9 times higher than the level of morbidity of children in an ecologically safe territory.

And the level of morbidity of children in the second zone with respiratory allergoses, ecology is 30 times higher than that of children in the region. This situation was also noted in the scientific works of foreign scientists. Especially it is proved that the trace element of lead at a high level forms respiratory allergoses in the child's body. Namely, the manifestation of respiratory allergies by trace elements of coal water released from oil production is confirmed by specific scientific data [36-40].

Among allergic pathologies, bronchial asthma occupies a special place. The level of this disease is not very high (1.108-1.114%) among children living in an ecologically safe area of the city. The level of this disease with a violation of the First ecology reaches 9.139% to 9.179 %.

Based on the data obtained as a result of the study, benzene, styrene, and gasoline trace elements released from oil production into the atmosphere led to an increase in the incidence of bronchial asthma by more than 9 times. In the atmospheric air of the second zone with environmental violations, heavy metals are concentrated in the atmospheric air at a high level. In this regard, the prevalence of bronchial asthma among children increased from 23.169 to 24.163. In other words, the effect of chemical pollutants in this area increased the incidence rate by 20 times [41-43].

The prevalence of chronic obstructive syndrome among children increased from 36.20% to 37.10% in the first territory with environmental problems in 2016-2018. In the South-Western territory of the megalopolis, its level significantly decreased in the studied years (from 96.112 to 95.112%). Thus, the reason for the change in the incidence rate was the shutdown of the lead plant.

The levels of gastritis and gastroduodenal pathologies also change in the territory with violation of this ecology. The level of pathology of gastritis and gastroduodenitis in the territories representing the ecology was from 2,194 to 2,198%. 27 times lower than the rate of morbidity of children in the first zone with environmental violations in areas with favorable environmental conditions. In addition, the incidence of children in the second zone with environmental problems is 60 times lower. We can say that the level differences in morbidity rates are confirmed by the full power of real and chemical pollutants.

The level of formation of nephropathy among children has developed at a very low level in the territories of ecology. Among children of the South-Eastern region with environmental violations, its level reaches 33,167 cases to 34,108 cases. In children of the second region with environmental disorders, the level of which is higher than in children from 192.141 to 192.162 [23-26]. Depending on the obtained scientific results, it is necessary to intensify medical examinations in connection with diseases of children in areas with environmental violations [44-46].

The results of research on trace elements of heavy metals and carbon in the environment increase the level of birth defects among residential children. In the South-Eastern part of the megalopolis, the average level of this disease reaches 8.11±1.07%. This indicator is only 0.16±0.01% in a well-developed area.

And its level was formed in children of the second region with environmental disorders at the level of 144.62±13.28%. In contrast, the rate of morbidity of children in the first residential zone is 53.5 times higher than the level of morbidity of children in the region in terms of ecology, and the rate of children in the second zone with environmental violations is 249.4 times higher.

Therefore, due to the high concentration of chemical pollutants in environmental objects, diseases of children with congenital malformations in an ecologically unfavorable zone can be included in the number of environmentally significant socially significant nosologies and they need to be gradually screened and examined. In the course of the study, the incidence rate of children in the first zone with environmental violations was 2.15 times higher than that of children in the zone with

environmental violations. And the incidence rate among children of the second zone with environmental violations is 4,105 times higher than that of children of the territory that is not disturbed by the environment.

The level of correlation between children's health and aerogenic carbon waters was 0.172 units. The density of correlation between chemical pollutants and children's health indicators in the atmospheric air is 0.19 units. Here, a special role is played by the degree of harmfulness of each chemical pollutant contained in the air to the indicators of morbidity in children.

Correlation of carbon waters with bronchial asthma among children in the atmospheric air, revealed in the study 0.176.

Analysis of the influence of aeropollutants (heavy metals) on the formation of childhood morbidity using the correlation method showed the following. The trace element of lead leads to an increase in the incidence of hematopoietic organs (r=0.189)and the formation of anemia among children (r=0.193), the formation of liver disease (cirrhosis of the liver) r=0.198, the formation of cerebral palsy (BCSA) (r=0.189 units) [ ].

DISCUSSION

Pediatricians of regional polyclinics must take into account the ecological and hygienic condition of the residential area when planning measures to improve children's health. It is necessary to establish social and hygienic monitoring of allergoses, nephropathies, obstructive bronchitis and anemia and gastritis among children of the South-Western residential area of the city, to take on dispensary monitoring of environmentally dependent diseases. Taking this situation into account, a model of a preventive program developed for children's health has been developed (Fig.2) and recommended for use by polyclinic pediatricians.

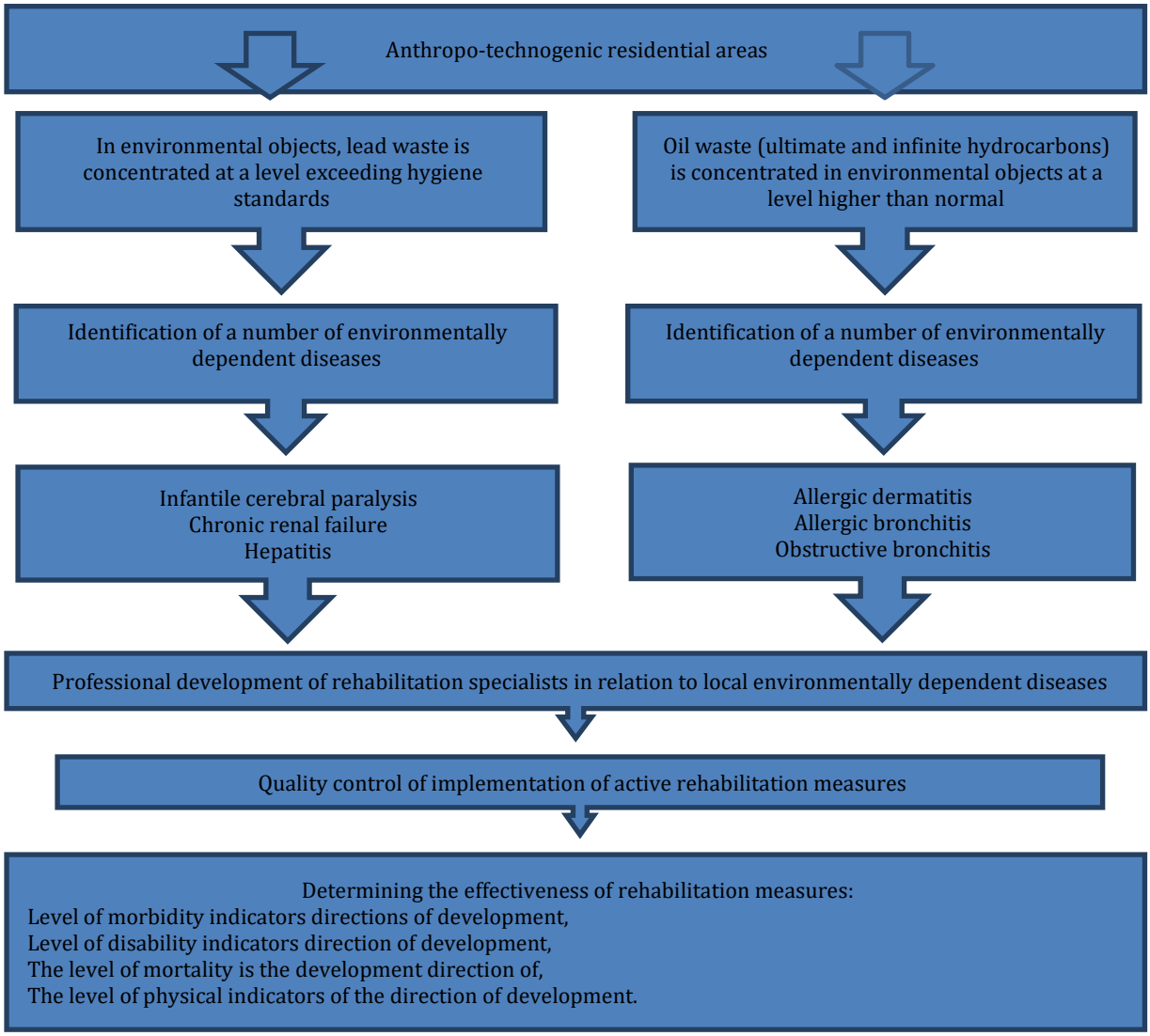

Figure 2. model of measures for prevention and rehabilitation of diseases related to the environmental situation

According to our recommendations, heads of polyclinics should train rehabilitation specialists who correctly organize the rehabilitation of environmentally dependent diseases. To do this, the heads of polyclinic organizations need to sign an agreement with the faculties of advanced training of higher medical educational institutions on the training of rehabilitation specialists in the necessary direction and, at the end of training, take part in exams and assess the quality of knowledge obtained.

Residential areas of the city of Shymkent are not ecological and hygienic. Since in the South-Western part of its territory, waste from a lead plant containing heavy metals, including trace elements of lead, zinc, and copper, pollute the air to a high degree. Waste from an oil refinery located in the South-Eastern part of the city pollutes the air, worsens the health of children and leads to a dynamic

increase in the level of various chronic non-epidemic diseases, depending on their chemical exposure. Heavy metals are highly concentrated in the atmospheric air of territory I with environmental violations, so unlike children in other regions, chronic obstructive syndrome, bronchial asthma, respiratory system allergoses, chronic hematopoietic diseases, nephropathies and congenital malformations are found at a high level. In the atmospheric air of a residential area in the South-East of the city with a high concentration of hydrocarbons (there is an oil refinery), so the children of this residential area have an excessive dynamics of chronic rhinitis, chronic bronchitis, anemia, allergoses, and digestive system diseases.

CONCLUSION

There is a direct correlation between the composition of morbidity indicators and the environmental situation of children in the territory with environmental violations. This will help develop a program to improve the health of residential children in a disadvantaged area and improve medical care.

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