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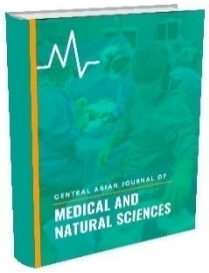

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Hygienic Assessment of the Impact of Harmful Substances Formed During the Production of Mineral Fertiliser on the Immune Health Status of Children

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Abstract: one of the main tasks of medical science is happy with the study of the state of Public Health in relation to future environmental changes. One of the most urgent tasks in our country is the protection of the environment, the Prevention of diseases and medical problems in strengthening the health of children, due to the negative impact of environmental factors on health. Since the country is rapidly developing fuel, energy, oil, chemical, gas industry, non-ferrous metallurgy, production of mineral fertilizers, agriculture, the study of Acholi health is gaining importance.

Key words: NED, hygiene, SChF, DOSEP and PH, immunobiological.

Introduction. One of the main tasks of medical science is to study the health status of the population in connection with environmental changes. Environmental protection from the negative impact of environmental factors on health, disease prevention and health promotion of children, medical problems are one of the most urgent tasks in our country. Due to the rapid development of the fuel and energy, petroleum, chemical, gas industries, non-ferrous metallurgy, production of mineral fertilizers and agriculture in our country, the study of public health is becoming increasingly important.

In recent years, the volume of production of mineral fertilizers has increased significantly, their total volume exceeds 143 million tons annually. Ammophos, the most valuable fertilizer for agriculture, is a complex nitrogen-phosphorus compound producing more than 47 million tons per year. The production and widespread use of this type of mineral fertilizers in agriculture leads to air pollution. Studies of ammonia vapors, fluorinated sulfur dioxide, ammonia vapor and sulfuric acid in the pollution zone have shown that these substances are detected in the air at a distance of more than 10 km from the sources. In addition, harmful substances affect the health of children and adolescents.

Purpose of the study : Hygienic evaluation of the implications of harmful implications of mineral implications on the immune health of children

Materials and methods of the study: It was carried out in the city of Samarkand, where the chemical fertilizer production plant of the Republic of Uzbekistan is located. In two districts of the city, located at different distances from the chemical plant for the production of Ammofos fertilizers, children's and adolescent institutions were taken as objects of research.

The first group is children and adolescents living in an industrial area, the direct sanitary protection zone is located at a distance of 3 km from the chemical plant, and the second group is located at a distance of 25-30 km from the designated enterprise in the administrative area of the city.(taken for control).

Child health status study methodical scheme of dependence on the impact of waste on the plant producing ammofos fertilizer:

Hygienic characteristics of the state of atmospheric air in the regions under study in Step 1.

Study of the effect of ammophos on the rat organism in Step 2 (experimental study).

In Stage 3, a comprehensive assessment of the state of health of children living in the ammafos production facility and control zone.

Scientific justification and implementation of hygienic measures for the protection of atmospheric air and the strengthening of the health of children and adolescents in Stage 4.

In scientific research, sanitary and hygienic, chemical, biological, physiological, sociological, immunological, pathomorphological and statistical research methods were used. To determine the impact of harmful emissions on children's health of the chemical plant for the production of Ammofos, the level of uniformity in social, material, housing conditions, water supply and medical services of the plant khududi and control districts was studied (questionnaire method). A total of 2015 questionnaire (questionnaire) sheets were analyzed (first stage of research). In addition, it was determined the location of the formation of toxic substances, the composition, the severity of the specific debris. According to the reporting data of the form" 2 TP-Xava", the total amount of dust and gases emitted from each specific source, their specific gravity in total pollution, was taken into account.

Results of the study: Analysis observations made it possible to determine the degree and range of distribution of waste from the Samarkand chemical plant (SKZ) ,

In order to eliminate atmospheric air pollution in industrial and control zones, taxable data of the chemical laboratories of the city'S SEO and Jsgi laboratory, the State Committee for Hydrometeorology, 1983-1986 were obtained. In the study, an analysis of sulfur dioxide, carbon monoxide , ammonia, hydrogen sulfide, sulfuric acid vapors, fluorine gas, ammophos dust was obtained. A total of 3,480 samples were analyzed.

To determine the presence of the above substances, air sampling was carried out in seven places (at different distances from the plant): at the following distances from the plant(0,5; 1,0; 2,0; 3,0; 5,0; 7,0; 10.0 km) and at one point in the control zone (the distance from the plant was 30.0 km). A day during the year, every 3 days of the winter season. The Lunar and season decadal taxa were varied in a selective circular table, allowing the pollution regime to be monitored in dynamics. The level of air pollution was assessed using various complex indicators "r" (M.A.Pinigin, 1976), " Ksum."(According to the instructions approved by the Ministry of health of the Russian Federation, № 2287-81)," K " (SN 241-75), subject to integral criteria (N. K. Pencheva, 1982).

In addition to common contaminants based on our analysis and observations of medical data, one of the specific emissions in the air, the maximum atmospheric concentration(PDK) of ammophos, has not been determined. Therefore, at the second stage of work, toxicological experiments were carried out

on rats. In a four-month chronic experiment, the effect of ammophos dust on the rat in low and high concentration was studied. In the experiment, 120 rats were initially taken (15 male rats in 8 gurix) weighing 140 GR. The Experiment Was Conducted By M. A. Conducted under the Pinigin (1972) scheme. The experiments were carried out in the laboratory of atmospheric ventilation inspection of the Scientific Institute of sanitary hygiene and occupational diseases of the Republic of Tashkent. The reduction of rats was carried out in 100-liter chambers, which were supplied with air at a speed of 40 l / min.

Before the start of the experiment, a mode was developed in the camera, which provides a constant concentration of ammophos.Observation of ammophos content was carried out by a specially developed Potentiometric method. The method is based on the determination of ammonium using an ionoselective electrode (S.M.Muradgasimov, et al., 1983).

Integral and specific indicators for assessing the biological effects of ammophos dust, including behavior, weight dynamics, antagonist muscle chronaxia (S. V. Speransky et al. P. Pavlenok, 1975) was studied; cholinesterase activity (X.Hestrin 1949, V. A. Modified by krivoglase, 1965); phagocytic activity of blood neutrophils (o. T. Alekseeva, A. P. Volkova, 1966); leukocyte count, red blood cells (in the"Picosoli" device), hemoglobin count (in the Erythrometer device) were performed. On the basis of the materials of experimental studies, 1160 biochemical blood tests were analyzed in rats.

The determination of biochemical and physiological parameters in experimental animals was carried out every 15 days of dynamics, as well as during the monthly recovery period before and after the expression. Immediately after the end of the recovery period, pathomorphological and histological examinations of the internal organs of the rat were carried out.

In the third stage, in addition to comparing the subjective indicators of environmental pollution on the territory of the chemical plant, the state of health of children and adolescents who seek medical attention was studied Ham (form 112).

Types and amounts of diseases E.N. In accordance with the recommendations of Goncharuk (1977), it was evaluated with intensive and extensional indicators. At the same time, 2,477 outpatient records of children and adolescents were examined, of which 1,050 were administered to the control group.

The study of the state of child health was carried out in accordance with the method proposed by the Institute of child and adolescent hygiene (1982) of the Ministry of health of the former Union. Health in 2,446 children and adolescents was conducted with a comprehensive assessment, of which 1,131 were taken from the controlled God. Physical development V. G. According to the vlastovsky (1971) method, it was evaluated using regional standards for the physical development of children and adolescents (V. I. Krivoruchko, N. N. Dyukova, 1984).

Immunological status of children living in the chemical plant khududi and control districts was studied (276 blood clots). Determination of the state of immunity in children and adolescents on the basis of the maximum standards, immunological examinations were followed (V. I. Krivoruchko et al., 1985).

In the course of the studies, serum immunoglobulins were identified in the Manchini style, and the amount of immunoglobulin E was determined in the serum.

Based on the studies carried out in the fourth stage, a set of hygiene measures for the protection of atmospheric air and the health of children and adolescents living in the waste exposure zone of the Samarkand chemical plant was developed. Mathematical processing of the results obtained includes determining the arithmetic mean, determining the regression coefficients for the construction of standard deviation, average error, correlation coefficient, graded and correlation relations.

Research results and discussion. The studies carried out make it possible to determine the following characteristics of the impact of harmful emissions from the production of ammophos on the health condition of children and adolescents.

As a result of sociological studies,it was made by the population about changes in health condition with an increase in distance from the source (sxz) (headache, dizziness, runny nose, reflector cough, sleep disorders, etc.), as well as complaints of unfavorable sanitary conditions (difficulty ventilating the room and drying clothes) naturally decreased ($r < 0.05$).

When studying the technological process of ammophos, despite the closed cycle of this production, Gases Detected in the formation of a complex of chemicals in atmospheric air include all substances released through multilayer pipes of a vapor-gas-air mixture up to 10 mg/m3, ammonia 60 mg /m3, sulfur dioxide up to 10 mg/m3. ammophos pollen 70 mg/m3. Unorganized waste from domes, doors and window openings should also be taken into account. The total amount of waste from the production of Ammofos exceeds 62,536 tons per year, of which 6,430 tons were not captured. Thus, the detected changes in physical development are the result of prolonged exposure to atmospheric air pollution. As a result of our studies, a violation of the body's immunoreactivity in conditions of real air pollution with skz emissions was found (Table 1). Immunological studies conducted have found significant differences in the immune status data of children living in industrial and control districts.However, the significant variability of individual indicators of immunity does not allow us to assess the strength of any influence factor with high reliability, and therefore cannot give a clear answer about the effectiveness of the measures being taken to improve the environment. A. S. Kozlyuk (1987) concluded that the indicator IDE as an indicator test for chemical exposure, hyperproduction in response to a chemical toxicant immune state "antigen twist" is observed.In this regard, the following indicators were studied. Ideni status in children aged 12-14 living in industrial and control districts.

Table 1. Immunological parameters (M+m)in children and adolescents living in research districts

Specification	Control District	Industrial district
Leukocyte 109 / l	6.2±0.8	6.9±0.6
Neutrophil 109 / l	3.1±0.7	3.2±0.6
monocyt109 / l	0.5±0.1	0.4±0.1
Lymphocyte 109 / l	2.13±0.3	1.6±0.1
T-lymphocyte 109 / l	1.4±0.1	1.2±0.1
Index T / V	3.1±1.1	3.1±0.6
Ig M ME / ml	147.4±9.6	149.2±8.9
Ig G ME / ml	128.0± 13.1	156.8± 10.2
Ig a ME / ml	125.0± 8.4	136.4± 10.1
Ig E ME / ml	84.0± 16.2	241.0± 32.5

The study found that girerproductsiyaide (100 ME/l) was found in 86.8% in the industrial district and only 26.8% in the control district was found in adolescents ($R<0.05$).

Consequently, children in an industrial area were affected by chemical contaminants in the air and hypere-globulinemia was observed. This data was then used to assess the effectiveness of wellness activities.

Conclusion:

1. The results of a survey of residents living near the Ammofos production plant and 25 km from it (Control District)showed that the studied areas are homogeneous in social and living conditions.

2. Despite the closed cycle of ammophos production, the atmospheric air of the industrial zone is contaminated with chemicals (ammonia gas, sulfur-fluoride gases, sulfuric acid vapors, ammophos dust, etc.). Their amount in the atmosphere of the industrial zone (PDK)exceeded the average permissible dose by 4.1-4.6 times. In the control zone, the amount of harmful substances in the atmosphere did not exceed the maximum permissible concentration.

3. In children and adolescents in the industrial district, prevalence rates are 2.3 times higher than their counterparts in control tamapni, and the highest rate has been found in the age group between 4 and 7 years (3.3 times (r <05)). The prevalence of chronic diseases in the industrial area is 1.9 times higher than in the control ni (p> 0.05).

4. Among children and adolescents in the industrial district, normal physical development averaged 79.3% and in the control group 88.7% (r < 0.001). At the same time, in children and adolescents in the industrial district, the deficit in body weight was 10.5%, excess body weight - 7.0%, and the delay in general physical development - 3.2%. This state of physical development in the Control District is 5.8%, 4.7% and 1.4% (r< 0.001) respectively.

5. In the industrial district, only 8.2% of preschoolers were healthy, 6.1% of schoolchildren were healthy (1st Health Group), which was significantly less than in the Control District, 3.2 and 3.7 times respectively, especially in schoolchildren of puberty.

6. Children and adolescents in the chemical arm showed a decrease in immunoresistance, manifested by a decrease in the total level of circulating T and V lymphocytes in the blood and an increase in Ig E production (28.8% compared to 86.6% in the control region), which gave ruy due to chemical toxicants of the "allergic sign".

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