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**SCORE RISK TO THE HEALTH OF THE POPULATION FROM THE EFFECTS OF MAN-MADE SAND  
TUNGSTEN-MOLYBDENUM ORE**

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*In assessing the degree of ecological trouble within the city for violations of the health of children and adolescents in connection with exposure to man-made tailings Džidinskogo vol'fra-Mo-molybdenum combine the dependence levels of General disease, diseases of the respiratory organs and the musculoskeletal system from environmental pollution. The observed changes are the result of the expression of the impact of environmental pollution on the Adaptive reaction. The relative risk of common diseases and respiratory diseases, pollution, meets the criteria for a critical environmental situation and ecological disaster.*

**Key keywords:** environmental assessment, emergency ecological situation, environmental disaster, pollution of the soil, the surrounding environment, technological tails , the incidence of child population, relative risk, Adaptive reaction

**ESTIMATION OF RISK OF HEALTH OF THE CHILDREN ' S POPULATION FROM INFLUENCE  
INDUSTRY OF SAND WOLFRAM-AMP ODC**

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*At an estimation of a degree of ecological trouble of territory of city by criteria of infringement of health of children and teenagers in connection with the influence industry tails wolfram-amp Djidinskya com*

*bine dependence of the levels of the common disease, diseases of bodies of breath and bony-muscular systems from environmental contamination is revealed. Observable changes grow out the influence of environmental contamination expressed on adaptable reactions. The relative risk of the common disease and illnesses of bodies of breath, connected with pollution, corresponds to the criteria of a crisis ecological situation and ecological disaster.*

**Key words:** *ecological estimation, extreme ecological situation, ecological disaster, pollution of ground, environment, technological tails, disease of the children ' s population, relative risk, adaptable reactions*

At the present time for decisions on environmental management and the protection of public health is one of the areas of risk assessment, health problems associated with exposure to adverse factors of the territory. This direction is extremely important when dealing with environmentally sensitive areas [3].

According to research [5], made mostly before 2000, the town of Zakamensk Zakamensko district of the Republic of Buryatia is characterized by unfavorable environmental conditions caused by years of Džidinskogo tungsten-molybdenum ore mill. The greater part of the territory of the city ecological situation is a crisis, and close to the environmental disaster.

Assessment of ecological trouble within the city, including the criteria for violations of the health of children and adolescents in connection with pollution of the environment, is today a pressing issue.

The aim of the study was to assess the environmental condition of the territory of Zakamensk in level of risk of violations of the health of the child population in connection with exposure to man-made tailings and other consequences of Džidin-sky tungsten-molybdenum combine.

Study based on violations of the health of the child population from environmental pollution, man-made tails Džidinskogo tungsten-molybdenum combine was carried out using materials: a) questionnaire survey of parents conducted by questionnaire RESEARCH INSTITUTE of occupational medicine and human ecology of the Angarsk CENTER Medical Ecology branch of the Russian Academy of medical sciences, developed by VSNCS Ni Ma-tore and A.v. Prusakovoj; b) medical examination of children and young people by medical specialists, including paediatrician, neuropathologist, pulmonologist, cardiologist, Endocrinologist and Otolaryngologist using laboratory and clinical diagnostic methods; in) child and adolescent medical documents for 4 years. Based on medical examinations for each child are determined by the group health, physical and mental development and disease diagnosis (if any), congenital anomalies and small. Varying degrees of impact on children of the soil contamination on the territory of permanent residence, and visited a children's Agency. Assessment of soil contamination is based on the results of ecological-geochemical soil mapping in the Geological Institute of the RUSSIAN ACADEMY of SCIENCES on total index Zs. The territory of residence depending on the degree of soil contamination (Zs) was divided into groups: Ia, I, II, III, IV, V, VI. preschool children attending kindergartens, taking into account the above groups are divided into 3 groups according to place of residence and stay in an institution with the wagrâzneniâ accommodation. Children of school age are subdivided into 5 groups according to the degree of contamination in the soil. The control is contingent, resident does not have the effect of man-made sand area. Influence national, sexual and age peculiarities when comparing the incidence of health disorders in child and adolescent groups formed by the standardization of indicators of direct method. Assessment of ecological trouble territory is carried out according to the criteria set forth in some sources [2].

The analysis of the results of the study of soils indicates that the cluster of man-made sand tailings and loop demolished Sands has a significant impact on the environment. More than 50% of the city is in a State of ecological trouble, including approximately 25.5% of the residential area of the city in a State of ecological disaster and 26% in a State of crisis or emergency environmental situations, 30% in the tense ecological situation on the measurement of total soil contamination (Zs) residential development chemicals of natural origin. Territory with satisfactory environmental condition is approximately 18.5%. The main contribution to total pollution (Zs) made of lead, antimony, tungsten, silver, copper, cadmium, zinc and molybdenum.

Picture of pollution in residential area of the city is evidence of its connection with the cluster of man-made sand tailings and loop demolished sands.

Accurate data on contamination of territories in institutions are usually absent. All day care centres are located in the territories of land in a satisfactory condition, tense and crisis situation, with slight differences in the percentage of the pollution levels.

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This fully applies to schools, with the exception of school No. 4, located in the new building and remote from sources of pollution to the South. On the territory of the neighboring institutions soil sampling points suggests the likelihood of relatively greater soil pollution in child welfare pre-school institution # 12 and school No. 5. However, the institutions have a different distance from the accumulations of man-made sand, allowing a measure of cumulative exposure to arrange them man-made sand on their territory in the following order:

- a) child welfare pre-school institution # 10 → child welfare pre-school institution # 12 → child welfare pre-school institution # 3 → child welfare pre-school institution # 2;
- b) school No. 4 → School No. 1 and no. 2 + high school  
→ school No. 5.

Characteristics of soil contamination of territories as equivalent effects seem to be more accurate than child welfare institutions.

According to information received, revealed that overall the incidence and prevalence of diseases of respiratory organs and the musculoskeletal system, their relative risks depend on the impact of environmental pollution, the Zakamensk. Feature of this dependence is a neprâproporcional'nyj increase in the frequency of respiratory diseases and their risks on negotiability and directly proportional to the increase in the incidence of respiratory and musculo-we-sečnoj systems and their risks, according to a medical examination.

Such a reaction is studied contingents of children and adolescents is quite an objective characteristic of man-made sand on environment in the light of modern ideas about the adaptation to adverse environmental factors.

The modern view, stated in some sources [4], the effects of various environmental stimuli of varying force and the duration of their effects in the body develop several types of common unspecific Adaptive reactions: reactions a workout-reaction to the weak impact of reaction activation (resistant and higher)-reaction to the effects of medium strength, intermediate between weak and strong; stress of Selje-reaction to strong, extraordinary effects. In addition, N.v. Lazarev and his followers (1962, 1963, 1971) described the stress state of nonspecific increased resistance (CNPC), which is a reaction to the weak and mostly medium-strength effect of various chemical, physical factors and accompanied by increased resistance.

Unspecific Adaptive reactions of the training and activation (by Engineer L.h. et al.), CNPC (by N.v. Lazarev), in contrast to the "pathological stress" Selye, lead to the true increase nonspecific resistance by lifting the protective activity of the body's systems.

In accordance with the ideas of multilevel role-development of non-adaptive responses as the force (dose) of reaction training, relaxed, high activation and activation of stress natural cycles, periodically repeated at different levels of reactivity.

This can lead to similar types of reactions to various on force of influence factors; less pronounced or lack of reaction to stronger stimuli when moving to a lower level of reactivity (paradoxical response). Here are some of the challenges in assessing the impacts of studied factors, determining the types of reactions and interpretation of observations in the population and population groups, particularly in epidemiological studies by anthropogenic pollution.

Since the reaction training, calm and increased activity leads to development of nonspecific increased resistance, some sources [4] to define them by CNPC. These reactions lead to different levels of nonspecific resistance of the organism, and consequently kontingen-ists, including moving to the State of stress or re-activate just, including pathological manifestations. Transitional State from CNPC to stress (or re-activate just) be classified as subtypes of CNPC, taking into account the different levels of tension.

On the basis of submissions, when examining the impact of different levels of factors on some sections of the city (our case) or in comparison with another city as the conditional supervision or the background must be contingent with the low rates of health problems, in particular, the incidence of both criteria developed by CNPC, without visible manifestations of tension Adaptive responses in the form of additional (or slightly larger) violations in individual systems and organs of the studied factors.

According to some records, [1], reactions and activate Adaptive responses or SNPS are non Foundation standards and increase non-specific resistance.

In the light of the foregoing, it seems to us the following interpretation for well-founded, distributing data, taking into account the impact of contamination:

- higher prevalence of respiratory diseases on negotiability and their relative risks, not accompanied by the identification of violations of the health of pre-school children and schoolchildren in the medical examination, indicator expressed the effects of pollution on adaptation mechanisms of the body, their inconsistent without the development of CNPC, i.e. without the appearance of additional individuals with CNPC;
- an increase in respiratory diseases according to the medical examination and

maintaining a relatively high incidence of negotiability and the risk is higher as compared to the vyšeotmečennym effects on the reaction of adaptation on the underdevelopment of the CNPC, the emergence of new individuals with CNPC;

• further increase in the incidence of respiratory diseases and the increase in the number of Kos-TNO-muscular system according to medical examination on the one hand and a slight decrease in respiratory morbidity on adressability and the risk on the other indicator of impact and adverse reactions from the systems of regulation not only State of the respiratory organs, but also of the musculoskeletal system, with simultaneous increase of resistance in some parts of the regulation with SNPS from acute diseases or in other words, the number of individuals worldwide radically altered by Uwe, resistant to diseases of the respiratory system of negotiability.

Hence, altogether we find expressed the dependence effect "impact", if you consider the effect of the impact of the increase as the relative risk and the number of classes increased her risk of diseases.

This provision demonstrates the table 1.

When comparing the relative risk of morbidity on negotiability and detectability (medical examinations) in preschool and school children, depending on the area of residence (table 2) there is a clear manifestation of the effect on time of exposure-effect ". The equivalent impact are highlighted three areas and soil pollution levels, the equivalent of time of exposure in this case is the age group (elementary school students) as the length of their stay on the territory. The effect includes the amount of risk, and thus the level of growth-induced diseases and the number of classes of diseases on these sources.

Presented in table 2, data show, as with increasing age (exposure) and effects (for more contaminated area) among schoolchildren at the beginning is only the risk of respiratory diseases on negotiability in the satisfactory condition, then the

**Table 1 The Dependence the relative risks of diseases of bodies of breath and OSTEO-muscular System the school children from the pollution of soils , Zakamensk**

Description areas of residence		The Relative the risk of		
Marking territory	Average the value of Zc ± (m)	The Incidence Of bodies breathing on negotiability	The Incidence Of on medical examination	
			Disease of the respiratory system	Disease OSTEO-muscular System
(I)(a)	6.95±2.66	1.0	1.0	1.0
I-III	9.3±0.75	2.4 *	1.4	1.1
(II)Uz	14.6±2.27	2.2 *	1.9	1.1
(IV), (V), (II)Uz	23.8±2.33	2.2 *	1.95 *	1.13
(VI)	129.9±21.07	1.9 * <sup>about</sup>	2.6 * <sup>about</sup>	1.24 *

**Note :** \* - are reliable differences in the relative to the rate of (I)(a); <sup>about</sup> - the reliable differences in the relation to the indicator areas I-III.

**Table 2 The Dependence the relative risk of incidence of child population from the level and duration of exposure to contamination the surrounding environment of the City. Zakamensk**

Pre-school Children				High School Students				
Characteristic of the progivaniâ		The Relative the risk of		Characteristic of the progivaniâ		The Relative the risk of disease		
The Designation-value It FEA-Nigeria	Average the value of Zc ± (m)	Disease <u>youngbodies and Management</u>		The Designation-value It FEA-Nigeria	Average the value of Zc ± (m)	Disease bodies breathing on industries - characteristics	On medical <u>OSmotru</u>	
		on reversibly-STI	on medical - Black inspection				Diseases of the respiratory system	Disease bone-muscle System
(I)(a)	-	-	-	(I)(a)	6.95±2.66	1.0	1.0	1.0
I-III	12.1±1.02	1.0	1.0	I-III	9.3±0.75	2.4 *	1.4	1.1
(IV), (V)	27.8±3.13	1.7 *	1.1	(IV), (V), (II)Uz	23.8±2.33	2.2 *	1.45 *	1.13
(VI)	129.9±21.07	1.5 * <sup>about</sup>	0.9	(VI)	129.9±21.07	1.9 * <sup>about</sup>	2.6 * <sup>about</sup>	1.24 * <sup>about</sup>

this higher risk of morbidity associated himself with an increased risk of respiratory diseases in school children living in the tense and crisis (VI, V, II, UT) and, finally, in school children living in crisis and an environmental disaster on contamination of soil (Zc), there is an increased risk of respiratory diseases on negotiability and the high risk of these diseases on detectability, as well as a significant increase in the risk of diseases of the musculoskeletal system.

The increase of students living in the area (I-III), apparently due to the impact of pollution caused by the location of the schools which they attend.

On the basis of the analysis the data obtained are fairly objective measure based on the observed relative risk of morbidity from territory of Zakamensk man-made sand. The picture changes depending on the contamination conforms to the modern scientific views about its effects on the body and the development of responses to the latter.

Assessment of the relative risks of respiratory diseases in school children and adolescents on the current interim criteria [4] to include ecological condition of most of the town of Zakamensk to ecological disaster risk and general morbidity on addressability to crisis or emergency environmental situations.

To determine the contribution of environmental-related diseases mainly man-made pollution from man-made tailings-factors in the overall incidence is determined by the attributive risk. Attributive risk is the incidence rate in the exposed population, which may be associated with exposure; is determined by calculating the frequency of cases for not exposed persons (control) from that of the exposed individuals; is expressed or absolute number of diseases or in% of the total number of diseases of the exposed (exposed) individuals.

All students residing in the territory of(I)to(VI) and attending school No. 1, no. 2 and no. 5, compared with students living in the new housing and out-of-school No. 4, the relative risk is 1.76 ratio and risk-43.2% attributes. This means that 43.2% of the total incidence of pupils (on demand), apparently caused by pollution of the environment man-made tailed Džidinskogo molibdenovo tungsten-century mill.

Discovered nature expressed the impact of man-made sand on health of children and adolescents is the basis for the development and

implementation of interventions for the prevention of acute diseases for the period up to the execution of remediation activities on the territory of Zack-mensk.

The highest risks are identified for respiratory diseases, whose incidence is associated with a reduction in the body's resistance to pathogenic factors from the effects of pollution.

One of the important measures for the prevention of such diseases and the rehabilitation of children and adolescents is widespread use of the drugs, which increase the body resistance to children in organized collectives to potential pathogenic factors.

The use of one of these complexes, consisting of èhinamaksa, polifepana, Maxi-Lake Baikal and glycine in environmentally unfriendly city of shelekhov, proved to be very effective. The greatest effect among high school students: up to 54.6% reduction in overall mortality and up to 59% reduction in incidence of SARS. The overall incidence of children kindergarten age is reduced by 25.1 25.2%-the incidence of ARI, acute respiratory infections and influenza to 31.45%, over-boleвамost' other diseases up to 31.5%.

Implementation of such complexes is 1-2 times a year during a possible increase of acute disease requires a relatively small financial outlay.

Complete study has made possible a more complete assessment of the extent of ecological trouble, based on an assessment of health problems and pollution of soil dwelling of complex metals and elements, as well as by increasing the period of observation for the degradation of terrestrial ecosystems.

According to the degree of ecological trouble, and in the light of previously completed studies, the status of the city may be rated as an environmental disaster on the studied medical and demographic indicators, a residential zone and soil contamination changes of nature, in particular soil degradation and land-based ecosystems. Almost all the bulk of residential development town, in addition to the new buildings shall be assigned to the environmental disaster of the medico-demographic criteria with regard to the impact of technogenic sand.

To prevent the risk of further spread of pollution in the city, increasing the zone of ecological disaster and crisis conditions and the risk to public health, improve the environment and the health of the population in order to display the status of the city ecological trouble, you must develop and implement a targeted comprehensive programme of conservation and preventive measures aimed at:

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- eliminating the adverse effects of tailings and plume of man-made sand on the natural environment and the living conditions of the population of Zakamensk;

- the prevention of child and adolescent health by increasing their resistance to pathogenic factors for the rehabilitation of the territory.

In order to clarify the danger of pollution to the natural environment and public health, measures to rehabilitate territory watercourses, ecological systems, and improve the health status of the population, the Organization of eco-hygienic monitoring on whom the withdrawal period the territory of the State of ecological trouble to perform additional research:

- pollution of vegetables and other agricultural products, ukosov of forage grasses grown on different soil contamination;
- current levels of water pollution and sediment r. Modonkul' and plum trees and their effects on aquatic organisms;
- the risk of pollution of agricultural land, including private plots and gardening, taking into account the type and soil acidity;
- the impact of man-made sand on health statistics on morbidity (on demand) for children and adolescents, violations of women's reproductive health and the health of newborns, including genetically caused.

#### THE CONCLUSIONS OF THE

Environmental pollution, the Zakamensk has adverse effects on the health of children and young people in the form of General disease, levels of respiratory diseases and musculoskeletal system.

Unfavorable effect develops as a result of Adaptive responses, providing resistance to acute and chronic disease increases depending on the level of exposure and the exposure and manifests itself in the form of increased morbidity and the relative risk, the number of violations in the system of protection with increased state of nonspecific increased resistance in some parts of the adaptation mechanisms.

The greatest effect is observed among high school students: the significant violations detected in living throughout the city, in addition to the new buildings, and more of them have living in crisis-ecological disaster in the form of increased incidence of diseases of the respiratory system (on negotiability and detection) and musculoskeletal system (for detection).

Most expressed violations are marked in the system of regulation of resistance to diseases of the respiratory system, prevalence of schoolchildren living in much of the city is in the 1.9-2.6 times.

In terms of relative risk of respiratory diseases of schoolchildren the environmental situation throughout the city, with the exception of the new buildings, can be classified as environmental disaster, and for general morbidity on adressability-like crisis.

The observed changes in incidence rates of children and adolescents are the result expressed the impact of environmental pollution on the Adaptive reaction, accompanied by the first decrease in the resistance of the organism, and especially schoolchildren pre-schoolers to pathogenic factors and an increase in the incidence of disease.

In this regard, one of the important measures to reduce the incidence and other violations of the health of children and adolescents during the implementation of the programme of rehabilitation of the territory is the introduction of mass prevention subprogramme aimed at increasing nonspecific and specific resistance to adverse factors, taking into account the characteristics of the impact of environmental pollution.

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