

Circumpolar habitat: safety And health of population



© **Shraga** Moisei, Doctor of Medicine, Professor of Social Work Department, Faculty of Social Work. Author of more than 220 scientific publications, including 9 monographs: "Social Security in Theory of Health" (2009), "Social illness (sociopath)" (2007), "Fundamentals of the Theory and History of Social Medicine (Public Health)" (2006) and others, one textbook, 10 teaching aids, including 4 with stamp: "the social environment (start noospheregeneza)" (2009), "Social Diseases (2008), etc. E-mail: medstat@atknet.ru.

One of the main objectives of the WHO - to convince national and international governing bodies, as well as the general public in a close relationship between health environment and ecology.

G.H. Bryndtland

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© Shruga Moisei., PhD, MD, professor of the social work faculty. Author of over 220 publications and 9 monographs': «Social safety in health theory» (2009), «Social diseases (socio pathology)» (2007), «Theory and social medicine principles (principles of public health)» (2006). Author of 10 training appliances, text books: »Social ecology» (2009), «Social diseases» (2008). E-mail: medstat@atknet.ru.

Abstract

Problems of extreme conditions for life and health of Homo sapiens in circumpolar environment and adaptation processes are discussed. Also shows limits of biological (physiological) adaptation mechanisms. Extreme and hypo comfortable circumpolar conditions of living are not the basic reasons of early mortality. But «cold factor» is considered to be very sufficient reason of primary infant and adult morbidity. Finally, we still don't know all mechanisms of influence of extreme conditions of North on endocrine system and obesity, reproductive system of women. From the biological equivalence position noospheric paradigm is putted forward into the Arctic and Russian North development.

Key words: *Arctic, North, hypo comfortable, circumpolar environment, Nordmen, extreme factors, adult morbidity, early mortality, obesity.*

Nordmen or men in the North?

The analysis of the problems of social security is still not widely known as the most famous ways of Russian Regional studies. Often the problems of regionalism and the main components of social security are treated separately from each other, as autonomous. For example, public health is opposed to other social facts. From a modern point of view, it is time for these two concepts should be analyzed within the mainstream system approach, in terms of their mutual relations and the principle of complementarity. The task is the necessity to incorporate questions of social security in the problem field of contemporary processes in the Arctic zone. We share the view that the idea of "nordichnosti» (Nordicity) is characterized as "non-European", "non-Catholic," "Non-Roman historical heritage." In this regard, it contradicts to the basic problems of the modern global development processes of modern transnational integration. In reality, the Arctic regions turn out to be functioning, integrated into the global processes that determine the status and parameters of social security. The northern regions of Russia itself can not be powerful in the reflection of the global challenges and to diversify the economy and solving social and ecological problems, they can not do these. But on the other hand, they are all eagerly looking for their "niche" or place in the global world. They had long been satisfied with the role of "province" or a resourceful appendage. Life in the northern regions, usually associated with one or two commodity sectors, and "forgotten" social infrastructure.

In 2009, Russia in the value of composite index of innovation development took place only 55 in the world¹. It is assumed that the innovation rating of Russia will be declined further, and probably to 2041, it will not be in a group of world leaders in innovation development. In this regard, no doubt, that the Russian economy for a long time will depend on the development of northern territories - the welfare of the people closely linked to the dynamics of hydrocarbon prices. V.T. Kadohov generally believed that "without the Northern Territories could not take place either imperial or Soviet, or modern Russia" [1, c. 81]. In this connection, the problem of "the great redistribution" clearly defines the surge of new interest sociologists, philosophers, social and local historians from Arkhangelsk [2] to the arctic theme.

The main advantage of monograph of T.I. Troshina, apparently, is its accessibility to an interdisciplinary readings and discussions. The author obviously does not want to follow the well established and generally cute myths about "Pomors". On the other hand, it is difficult to avoid the impression that the book is not a scientific publication. And not only that the book contains a number of controversial conclusions and judgments, because it is perceived as a dignity of the work. Disadvantages of the monograph, from our point of view, except no need to repeat in the text, due to its methodology. We turn to those same characteristics of that frankly flawed socio-ecological point of view. T.I. Troshin clearly bordered herself with temporary restricted determinants. And she positively does not want to discuss outwardly attractive

¹ Mironov S.M. Northern regions: the right to special care of the state / / Horizons of economic and cultural development: Proceedings of the Second Plenary Session of the North socio-environmental Congress / Ed. Ed. VA Chereshev. - Moscow: Nauka, 2007. - p. 7-10.

hypothesis: the Arctic homeland of the ancient Slavs —. The author really convinces the reader that the Russian population of Northern European evolved in very specific conditions, which was originally formed as a public company sociogenic because its origin was related to the various territories of the Russian state. She notices that population lived in the North "in isolation, being weakly connected economically." Such a view is clearly and historically solves the problem repeatedly discussed the problem of physiological adaptation of people in the north and north-eastern Russia. We are against excessive biologization process of socio-ecological resettlement rights in the North, because it can not be reduced to human physiology, and even more so to immunology and / or endocrinology. Obviously in reality, this process of formation and assimilation of certain sub ethnos (cross-correct) stereotype behavior. Expression of the northern people (nordmen) certainly does not contain any scientific sense. And this is nothing more than a brightly metaphor!

By studying the social and economic history of the Russian North, T.I. Troshina identified three major areas. Northern region, where the fishing industry has always prevailed over farming, which was here only like a thing of secondary importance. The central region, where agriculture began to develop only in the XIX century due to changes in general economic conditions in the region. South and South-West region in which agriculture, despite the complexity of climate, has traditionally been a leader. Does the authors choice is honest to the entire system-imperative of ecosystem? Is the object rightly defined in the study area? And is it really so important such significant role of climatic factors in the social life of the Russian population of Northern European? A negative answer to this question objectively gives the author himself, when the differences in the structure of mortality explained by social, rather than climatic factors. And the author's hypothesis is quite natural in an additional confirmation of the spatial distribution of "hiccups" among women. Phenomenon that is "significantly less common in the agricultural and fishing" areas than "in half agriculture areas", where the share of female population, according to the author, got "hard life and hard labor." Accordingly, in this regard, it is difficult to agree with the conclusions of demographic Troshin, which believes that the whole Russian population of the North was quite healthy. But she said that in the province of "less than half of births die before their fifth milestone." The author, speaking of the average life expectancy in the modern sense, forced to admit — LE "was very low due to high infant and child mortality. High levels of female mortality at the age of 20-35 years old, she explains frequent pregnancies and childbirth. And the increase of male mortality in the age of 30-40 years is associated with injuries at the work in different branches and production, as well as "from drinking bouts." Clarifies the nature of the relationship of alcohol and Labor — «last reason originally more common in agricultural regions, and the end of the XIX century and in the environment has traditionally fishing population shift to factory work." Can a writer with little information to characterize the Russian population in the North as healthy? The conclusion is obviously made on the basis of the significant number of northern long – lived? Or, we can assume that the criterion adopted by the high growth and a strong constitution of individual Russian Pomors coast-dwellers, in comparison with the Sami and the Nenets, rather than scientific criteria of social hygiene and demography. The structure

of the mortality of T.I. Troshina counts on extensive index, i.e., specific gravity, although it is not a measure of probability of death and does not allow for spatial and temporal comparisons. The scientific and practical understanding of the term "North" today means inaccessible and sparsely populated high-latitude part of the Russian Federation and to the south adjacent territory.

In our view, a social historian and ethnographer, T.I. Troshin not quite correct to compare three multidirectional demographic trends among the population of the vast northern region: 1) "The reduction in the beginning of XX century the number of long livers', 2) population growth 3) life expectancy. Of course, you must agree with the author that the penetration of capitalism here ("civilization") changes the demographic trends in the North. But, despite the presence in this judgment's common sense, the genre of the monograph irrevocably assumes that there scientific justification. Its basis is a more reliable statistical database on the demographic structure of the three northern populations studied. Statistics is one of the weaknesses of the monograph.

The growth of the same population and increasing life expectancy, - certainly, the indicators showing improving conditions and quality of life for northerners, and it may indeed merit in penetrating these pretty wild place of capitalism. The reason for the decrease in the number of centenarians requires further research and fine than the construction of narratives of speculative hypotheses.

Noospheric transformation of the North

Circumpolar environment of the human exists around the North Pole. A. Toynbee [3] distinguished the so-called "delayed" form of peculiar civilization — just autochthonous populations of the circumpolar world, but not the modern majority of the population in the Arctic, the town dwellers, not related to the landscape. Obviously, a professor of human Y.F.Lukin, when considers that the issue of scientific research northern communities are still limited by the conceptual apparatus. And he is positioning as an interdisciplinary regionology mega science of the regions. But can we agree with the positioning regionology as mega science and can generally be an interdisciplinary science? We think not. A.A. Davydov in this regard, particularly draws attention to the difficulties of conceptualization and operationalization of the concept of "regionology" [4]. These difficulties are updated in the study of new social realities, in particular, the European Community (EC), and in our case - the Arctic. General Systems Theory (GST) has great theoretical and empirical possibilities in comparison with some sociological theories [5]. It is a scientific theory of upper disciplinary, all logically conceivable systems. Based on the methodological principles of the system, extensive use of empirical data on specific scientific disciplines, mathematics, and computer modeling, focused on specific practical application in the field of management.

Methodological dead - end in historical scholarship at one time tried to overcome L.N. Gumilev, who saw the problem at the junction of the ethno genesis of science: the history, landscape, ecology and biological genetics [6]. He believed that a systematic approach allows him to

consider ethnicity as a system. His followers K.P. Ivanov and S.A. Khrushchev created the concept of homeostasis of the North. As a systemic imperative of ethnos, they took food chains community. And this is another strong argument in favor of the concept "the northern people (nordmen)" no more than a metaphor. Even more so in the era of the global environmental crisis, when the general population is not tropically linked to a specific cross-faithful terrain!

A.A. Dregalo and V.I. Ulyanovsk imagined regional society as a community where, despite the many social transformations preserved the identity of Russia, where socio-cultural space absorbed the Sophian, trinity, yspenskii (Theotokos) traditions of thinking. Despite the "collision" of traditional northern culture with the introduction culture <...>, the course for preserving the "self", Pomor tradition remained the same. At the same time they are referring to the opinion E.J. Volkov [7], confirm the "<...> need for a systemic view of all elements and relations of the social sphere <...>." For systemic – one of the most important characteristics of the social sphere. Arctic scientists consider society to heterogeneous social systems in which, along with a subsystem of a person includes natural, technological, and other ethno-social subsystem of society.

A.P. Avtsyn together with other authors [8] and extremity sub extremity (discomfort) considered the general features of the human environment of the northern regions. Indeed, for example, the landscapes of the Arkhangelsk region characterized by low biological effectiveness of climate, ie insufficient amount of heat that was the basis include the "northern taiga" to a group of environmentally unsuitable for living landscapes. And we must agree with the hypothesis that non-specific nature of the interaction function factor "heat supply" of northern landscapes and human populations and its role in metabolic and respiratory system. It is no accident that, historically, temperature factor plays an important role in determining the locations of human settlement in the early stages of civilization. [9]

It should be recognized in this regard that the evidence of labor T.I. Troshina, describing the historical experience of colonization of the Russian North, from the standpoint of local history is very well deny a persistent myth about the extreme nature of a totally natural environment for human life in the European North. As in the case of any other pollution of the human environment, the contribution of cold (environmental factors) must be quantified [10, 11]. Level (degree) of luxury in the region significantly affects the nature of its development and settlement, and is the basis for an objective assessment of the human condition. Zone "north" on the degree of comfort to people's livelihoods have traditionally represented five types of areas.

Table 1

Criteria's of comfort in natural conditions

| factors/conditions | 1 | 2 | 3 | 4 | 5 |
|---|----------------------|----------------------|--------------------|------------------|-------------------|
| Repeatability of comfortable weather, % less | 10 | 10-20 | 20-35 | 35-40 | > 40 |
| The frost free period in a year, days, less | 70 | 70-90 | 90-105 | 105-110 | > 110 |
| UV deficiency, more days | 150 | 90-150 | 60-90 | 30-60 | - |
| The duration of the polar day and polar night, day | | | | | |
| UV deficiency, more days | 37-74 | <37 | - | - | - |
| The duration of the polar day and polar night, day | | | | | |
| Heating period, more days | 300 | 275-300 | 250-275 | 225-250 | < 225 |
| Temperature of heating period, t° C | from - 24,2 to -12,7 | from - 24,2 to -12,7 | from -13,0 to -3,0 | from 7,0 to -2,0 | from -3,7 to +6,0 |
| The sum of active temperatures during the period with an average of +10°, days less | 800 | 800-1400 | 1200-1600 | 1500-2000 | 2000-3500 |
| The total thermal insulation of clothing, clo -days over | 1500 | 1200-1500 | 900-1200 | 600-900 | <600 |

1 – Extreme; 2 – Discomfortable; 3 – Hypo comfortable; 4 – Precomfortable; 5 – Comfortable

A.G. Isachenko together with other authors, by considering the problem of ecological geography, and take as the fundamental concept of the ecological geography of the idea of "ecological potential of geographic systems." He took medical geography (medical ecology) as a link between the physical-geographical and socio-economic units of integrative geography. And hence it is appropriate to draw attention to the following logic – study the problems of formation and development of territorial communities of people always leads to the need for spatial analysis of the health of populations, which will be a function of the results of epidemiological forces causes of disease [10. P.18].

Table 2

The number of the population in extreme regions of the North along the administrative territories of Russia

| Territory/number in the Northern Area | extreme | discomfortable | hypo comfortable | total |
|--|----------------|-----------------------|-------------------------|--------------|
| Murmansk region | 158,0 | 830,8 | нет | 988,8 |
| Karelian Republic | 23,6 | 191,2 | нет | 214,8 |
| Arkhangelsk region | 122,5 | 31,6 | 982,2 | 1136,3 |
| Republic Komi | 317,2 | 132,8 | 692,5 | 1142,5 |

Climatic factors, from the point of medical ecology (epidemiology), should be regarded as sufficient cause of thickness (illness) of population in the North. This is reason enough, as, for

example, recognized the role of cigarette smoking on lung cancer incidence by men and coronary heart disease in women. It should also include such natural factors:

- 1) Fotopereodika – season changes in the duration of daylight²;
- 2) Deficiency of biologically active part of the solar spectrum – the period of lack of UV radiation – from November to February, and in December the total UV radiation in the "B" is missing - the period of biological darkness even in midday hours of the day;
- 3) Fluctuation of the mineral composition of surface waters – from mild to middle hard;
- 4) Frequent changes of air masses, associated with the passage of pressure systems (cyclones and anticyclones);
- 5) Space is equally accessible to warm air masses coming from the Atlantic Ocean and the cold, invading from the Kara Sea, Arctic Basin.

V.M. Razumovsky said, that the indicators of ecological potential of landscapes, above all, express their residential properties, ecological and demographic capacity, and thus the latest becomes (even with a rotational mode of operation) as a basis for identifying the necessary environmental constraints [11. 45]. The logic in this case, rejecting, in fact, the concept of priority extremism, says noosphere approach to the arrangement Arctic: the existence of human populations in the circumpolar environment requires the establishment of a specialized social infrastructure for the mediation of the main natural environmental factors and ensuring social security of people.

In modern technological environment of the human habitat (the techno sphere) natural factors of the risks do not exhaust all the ecological risks to human life and health. Natural landscapes in the Arkhangelsk region have been few technological transformations, even with the large logging of coniferous forests of the northern and middle taiga. In the northern cities of geography and climate are mediated by pathogenic agents, and thus, there are formed other risk factors that make up the totality of the conditions of population in urban areas. It is important to recognize the following components of society: the size of the settlement, living near chemical plants, water conditions, conditions of human nutrition, polluted residential areas, recreational opportunities, etc.

Talking about the social importance of climatic factors of the North, we can certainly say one thing. In conjunction with technological and social stressors are stochastically regulate the frequency of the imbalance of immune mechanisms and the formation of different variations of the acquired (secondary) lack of immune. Important is the fact that a sufficient cause of disease, including "cold" causal factor, has a component that can and should address social interventions in the relevant patterns of behavior of people. Thus, despite the mobile lifestyle of

² In conjunction with the other extreme and FR forms of human interaction for the environment of high latitudes

the Russian North, they were forced to because of the climate construct more or less adequate houses, and in some places still have special winter houses.

From the biological positions, the number of increase of the population's species, must be regarded as a positive phenomenon, and vice versa. The maximum number of residents of the Arkhangelsk region was recorded in 1990 - 1 million 576 thousand people. At the beginning of 2009 the resident population of the Arkhangelsk region was now only one million 262 thousand people. On this account can be formulated as a hypothesis about the local tendency of negative dynamics of the total population of the Arkhangelsk region. However, co-ordinating population dynamics in the northern regions of Russia and St. Petersburg have revealed a very high regard, tightness of orientation movements of population (k.k. => 0.9). And it can not be explained by the intrinsic properties of the regional media, and rejects the hypothesis (pic. 1 and Table. 3). A strong relationship between the dynamics of the population of the Arkhangelsk Oblast and Nenets Autonomous region – linear correlation coefficient of 0.7.

In the cities of Arkhangelsk region is living about 74,5 %, and in rural territories is – only 25,5 % of population, this feature is complemented by settling for the fact that about 70% of the urban population lives in five cities. Two of them are (Arkhangelsk, Severodvinsk) - large, and three are (Kotlas, Novodvinsk and Korjashma) belong to the largest middle and welterweight cities. Technogenic transformation of geographical systems is the reality of man and the era of urbanization, and entering in the list of the most important problems of social ecology, contemporary landscape and Area Studies. And it's reality that can not be refuted, even scientists, standing at the extreme positions biologizatorskih and deny the new "anthropocentrism" and who, in the final form of the problem itself is drowning in a stream abstract arguments about "biogeocoenose in general," where a person is considered only "as element of nature, only the upper link in the food chain³.

Table 3

***Population dynamics in the Northern regions
(In thousands)***

| | 1990 | 1996 | 2001 | 2005 | 2006 | 2007 | 2008 | 2009 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Republic Komi | 1249 | 1133 | 1043 | 996 | 985 | 975 | 968 | 959 |
| Arkhangelsk region. | 1576 | 1476 | 1369 | 1305 | 1291 | 1280 | 1272 | 1262 |
| Vologodskaya region. | 1355 | 1333 | 1290 | 1245 | 1235 | 1228 | 1223 | 1218 |
| Murmansk region | 1191 | 1037 | 923 | 873 | 864 | 857 | 851 | 843 |
| Saint Petersburg | 5002 | 4820 | 4715 | 4600 | 4581 | 4571 | 4568 | 4582 |
| Russia | 147665 | 148292 | 146304 | 143474 | 142754 | 142221 | 142009 | 141904 |
| North-western region | 15310 | 14750 | 14199 | 13731 | 13628 | 13550 | 13501 | 13462 |

Resource: Russian statistical yearbook. M., 2009.

³ Samohin U.I. Overcoming anthropocentrism in ecological training of teachers, geographer / / Ecology and Education: Collected materials. - M.: MGOPU, 2001.

There are rare pockets of urbanization in the Arkhangelsk region, which are associated with placements enterprises of pulp and paper, sawmilling, shipbuilding, fisheries and external transport — mono industry -residential complexes (agglomeration). Geotechnical systems are inadequate for the populations living in these factors and conditions: thermal stress, overcrowding and population density, chemical, physical and biological contamination of the general media, chemical contamination of crop products, lack of minerals and trace elements, inadequate housing, civilized type of food and etc.

For understanding the nature of the interaction «resources of danger» of techno sphere and modern human populations, we introduced the concept of "population factors of low intensity (PFMI)." These are the risk factors (RF), which are single exposure can cause stress of homeostatic systems of the human body that is outside the corridor of the physiological norm. PFMI can not be considered the cause of disease in humans or mass poisonings among them. Moreover, on their own population factors in low-intensity non-system effects are neither external etiological factors nor epidemiological causes of morbidity. Their impact on the living complex system should be characterized as information [12]. The lack of "strength" of the signal is compensated by the duration of interaction, which generates stress. They always are the components of sufficient causes of disease. These are independent variables with respect to medical events (morbidity, mortality). They constitute the external system of the human environment and are with each other in additive, synergetic or antagonistic-logical relations. The complex concept of "human environment", obviously, can be represented as the "environment - a man and his environment BME-power", which expressed a holistic approach and equivalence of nature, man and society. общества.

Environment and the health of the population of the North

In science, there is a consensus about the understanding of the content category of "health and environmental factors." This is all the agents of the human environment [13], referred to as risk factors, regardless of their nature, and grouped by participation in the interaction of causes and conditions of disease. On the basis of three criteria: 1) the duration of interaction with the population, 2) pathogenesis 3) assess current capabilities to eliminate (limit or indirect) interaction with the population, we have identified priority medical and ecological pollutants are landscapes of the Arkhangelsk region, which ultimately allows you to group and discuss the nature (hazardous and harmful) conditions of the taiga (Table 4). In contrast to the conditions of Siberia and North Asia, the Arkhangelsk region has the interaction of the meteorological factors that can combine the concept of "cold, cloudy, humid weather." In all cases, long cold and wet enough during the year in conjunction with the prolonged absence of sunlight is the basis for the formation of the population at risk in their accommodation in the cities of Arkhangelsk North.

A.A. Dregalo и V.I. Ulianovskii lead in his monograph the results of subjective evaluation of the factors deteriorating of health in Novodvinsk (July 1998). They believe that they have installed a paradoxical fact: "<...> in spite of the continuing deterioration in welfare, social and living conditions, among the causes of disease in the first place citizens — unfavorable environment

(20%), followed by working conditions – (17%), the third – age (16%) and only the fourth – the quality of food (13.5%). »Characteristically, it was established communication disorders and living conditions among the workers of the Arkhangelsk Pulp and Paper Mill, which is also the first place put an unfavorable environment (22.6%) conditions. In both, as in the first and second cases, an unfavorable climate as a factor in losing health called respectively 1.7 and 1.3% of those surveyed.

Table 4

***Priority medical – ecological factors of risk
(Disease conditions) of geographical systems***

| Criteria | Diagnostic features |
|-----------------------------|--|
| Bio climatic | a) The annual average temperature of air less than + 1 and (-1) degrees C, and b) 260 or more days per year with the temperature of air 10 degrees or less, c) 280 and more days per year with outside temperature 10 degrees and less than d) 200 and more cloudy in the general cloudy days a year e) the annual rainfall over 600 mm. |
| Bio geo physical | a) 140 or more days per year without the sun, and b) lack of UV radiation, and c) photoperiodicity, d) deficit (surplus) of visible light. |
| Geochemical | Deficiency of minerals and trace elements in soils and surface waters. |
| Natural chemical pollutants | Organic substances of natural waters |
| Biotic | a) The shortage of local food products b) esthetic dissatisfaction - lack of color variety, dullness of visual images, etc. c) the relative inaccessibility of recreation. |

The question of optimizing the environment to the north of Europe has not only paradigmatic or political, but humanistic and value, and requires a "multidisciplinary approach" in sociology - Sociology of integrative-based systems approach. Evaluating the integral rough indicator of public health, what we believe mortality was not found "northern route" (see Table 5, 7). Epidemiological structure of mortality in 2009: 1 st place circulatory diseases (115-147) in the second neoplasm (56-89) and the third external causes (239-256, 272-274). In rural areas, mortality rate of deaths from all causes, circulatory diseases and external causes indicate a greater likelihood of these reasons, the rural setting is more dangerous to human life. In the Arkhangelsk region there is a high probability of death as accidental alcohol poisoning and suicide, and from all types of traffic accidents and homicides. In the Murmansk region all-cause mortality was lower than in other regions of Russia, except Moscow. By the NAO, this figure was lower only in the Komi Republic, the Southern Federal District, Murmansk and Moscow, but here was the highest number of deaths from external causes - 2.25 times higher than in St. Petersburg, and 3, 55 times less than in Moscow.

It should be noted that mortality rates in the WHO European Region vary considerably by cause of death and age groups as between groups of countries and between countries. For example, the geographical dispersion of mortality from cancer and cardiovascular disease is relatively small (correlation coefficients less than 1.5 on average). The exception is mortality from circulatory system diseases and external causes in Russia and Uzbekistan, in relation to that of France (overall) were respectively 5.55, 5.18. And from external causes in Russia in relation to that of France - 4.75. For deaths from infectious and parasitic diseases and external causes of these variations are higher, which indicates the importance of environmental factors. In Russia, Uzbekistan and sub national differences in relation to that of Austria, were respectively 5.2, 4.5. In addition to environmental factors associated with geographical location, which may increase the risk of death, the impact of such gender-related factors such as lifestyle and behavior, can further increase the risk of death among men. However, these results should be interpreted with caution as they reflect the aggregated data [14].

In the Arkhangelsk region the frequency of all-cause mortality did not differ on the likelihood of mortality in the city of St. Petersburg, but the mortality rate in the North has a different epidemiological structure: very low (more than 2.5-fold) mortality from infectious and parasitic diseases; slightly higher mortality from respiratory diseases and circulatory diseases and higher mortality from external causes (Table 6).

Table 5

The structure of mortality for the main categories and selected causes of death per 100000 population of Arkhangelsk region in 2009

| | All populations | Urban population | Rural population |
|--|-----------------|------------------|------------------|
| Total death from all causes(1-228, 239-256, 272-274) | 1435,892 | 1286,897 | 1853,06 |
| Diseases of circulatory system (115-147) | 820,271 | 700,669 | 1155,142 |
| Tumors (56-89) | 211,009 | 211,517 | 209,587 |
| External causes (239-256, 272-274) | 197,816 | 180,021 | 247,638 |
| Diseases of the digestive system(165-179) | 63,183 | 64,07 | 60,702 |
| Diseases of the respiratory system (148-164) | 49,672 | 49,94 | 48,924 |
| Random alcohol poisoning (247) | 39,42 | 37,752 | 44,092 |
| Suicides(249) | 37,513 | 31,711 | 53,756 |
| All types of transport accidents (239-241, 272-274) | 21,617 | 18,66 | 29,898 |
| murdering (250) | 19,631 | 17,474 | 25,67 |
| Several infections and parasitic diseases (1-55) | 11,286 | 11,002 | 12,08 |

Resource: Central base of statistical data. Federal State Statistic Service

On the other hand, in the city of St. Petersburg, mortality from neoplasm was the highest in Russia – 272, 90 per 100 thousand inhabitants against 203.80 per 100 thousand people in Russia as a whole. In the northern capital from 1990 to 2007. Infant mortality declined from 18% to 4.3%. In 2007 the figure was more than 2 times lower than in the Arkhangelsk and almost 4 times less than in the Nenets Autonomous Okrug (Table 8, pic 2). The trend of infant mortality in the city of St. Petersburg is very steep.

Table 6

Mortality of the population by main reasons of the death in the region of Russia in 2008. (The number of deaths 100 000 man)

| The subjects of Russia, Federal districts | all | Infection s and parasites | Tubercul osis | Tumors | FSU ⁴ | AML ⁵ | AML ⁶ | External |
|---|---------|---------------------------------|------------------|--------|------------------|------------------|------------------|----------|
| Pskovskaya | 2165,10 | 25,40 | 22,40 | 240,70 | 1332,70 | 88,60 | 95,30 | 245,60 |
| Novgorodskaya | 2089,00 | 32,50 | 24,80 | 231,40 | 1267,20 | 72,70 | 94,90 | 249,50 |
| Leningradskaya | 1796,30 | 36,30 | 24,60 | 237,60 | 1000,50 | 66,80 | 89,50 | 236,20 |
| Moskovskaya | 1661,20 | 19,40 | 13,40 | 252,30 | 996,50 | 50,10 | 74,90 | 177,00 |
| Vologodskaya | 1631,90 | 14,30 | 9,90 | 215,90 | 939,30 | 59,30 | 89,10 | 196,50 |
| Karelia Republic | 1615,80 | 23,50 | 18,10 | 224,90 | 888,40 | 51,10 | 64,90 | 196,90 |
| Kaliningradskaya | 1531,40 | 31,90 | 15,90 | 182,10 | 749,00 | 51,20 | 90,60 | 218,40 |
| Arkhangelskaya | 1459,90 | 12,20 | 9,90 | 196,90 | 836,30 | 52,70 | 59,80 | 209,40 |
| Saint - Petersburg | 1458,10 | 30,40 | 11,60 | 272,90 | 890,10 | 43,50 | 60,20 | 112,20 |
| NAD | 1277,90 | 0,00 | 0,00 | 161,80 | 590,20 | 16,70 | 38,10 | 287,90 |
| Komi Republic | 1273,70 | 22,50 | 17,40 | 168,20 | 592,90 | 52,10 | 78,10 | 206,00 |
| Murmanskaya | 1200,00 | 12,80 | 8,30 | 160,40 | 680,70 | 39,00 | 75,10 | 131,20 |
| Moscow | 1183,90 | 14,10 | 6,50 | 225,60 | 669,20 | 30,90 | 52,20 | 81,00 |
| North western. F.D. | 1565,90 | 25,90 | 14,90 | 229,30 | 899,80 | 53,60 | 74,40 | 177,10 |
| Privoljskii F.D. | 1512,20 | 21,10 | 15,30 | 188,40 | 868,90 | 62,80 | 63,70 | 192,20 |
| Siberian F.D. | 1437,00 | 35,80 | 29,30 | 202,50 | 738,50 | 70,00 | 63,30 | 224,50 |
| Far eastern. F.D. | 1364,20 | 34,70 | 27,00 | 181,00 | 718,40 | 58,70 | 72,30 | 219,60 |
| Ural F.D. | 1334,90 | 31,20 | 21,70 | 196,20 | 708,00 | 58,60 | 58,60 | 189,20 |
| Southern F.D. | 1213,90 | 22,40 | 18,20 | 175,70 | 711,50 | 40,00 | 50,20 | 106,70 |
| Russia | 1462,40 | 24,30 | 17,90 | 203,80 | 835,50 | 56,00 | 63,70 | 172,20 |

Resource: Central base of statistical data. Federal State Statistic Service

⁴ Diseases of cardiovascular system

⁵ Diseases of respiratory system

⁶ Diseases of the digestive organs

Russia still can not overcome the second stage of demographic transition that began in developed countries in 1960 and brought most of them have good success. The situation in Russia generally fall out of the traditional scheme of transition: The unprecedented increase in violent deaths and the equally unprecedented increase in deaths from circulatory diseases at a young age is a reverse movement, compared to the path traversed by developed countries, epidemiological regression.

Really second epidemiological transition affected only children's age and, possibly, some quite small groups of adults. The successes achieved by the West, was made possible thanks to the fact that they were correctly understood the causes of death that were released to the fore in the new stage of struggle for mortality. If the previous stage the main efforts were directed primarily at reducing mortality from infectious and other acute diseases, the new phase was associated with a reduction and redistribution toward older ages mortality from diseases of the circulatory system, neoplasm, and other chronic diseases: diabetes, ulcer stomach and intestines, chronic diseases of urinary system, etc. And most importantly thing — as with the widespread decline in mortality from external causes. This strategy is widely understood, demanded a tougher environment, strengthen the protection against accidents of cases, to increase individual disease prevention, the fight against harmful and dangerous habits, in fact, significantly change the entire way of life.

Russia is still living at the beginning of the second stage of epidemiological transition. The key areas for the death is still associated with the paternalistic efforts of the health care system, celebrates medical approach, where the major successes expected the introduction of new therapies, the development of advanced medical technology, etc. At the same time, the behavior of the population lifesaving little changes, and it turns out to be a major obstacle to reducing mortality.

It is believed that the interaction of human populations and environmental health factors, the level of the primary disease in northern higher than the average for Russia as a factor of 3-5. More than twice the northerners' higher incidence of respiratory diseases, circulatory, oncopathology. Among children 13-16 years, only 10-15% can be considered relatively healthy, the infant mortality rate exceeds the average rate of 2-3.

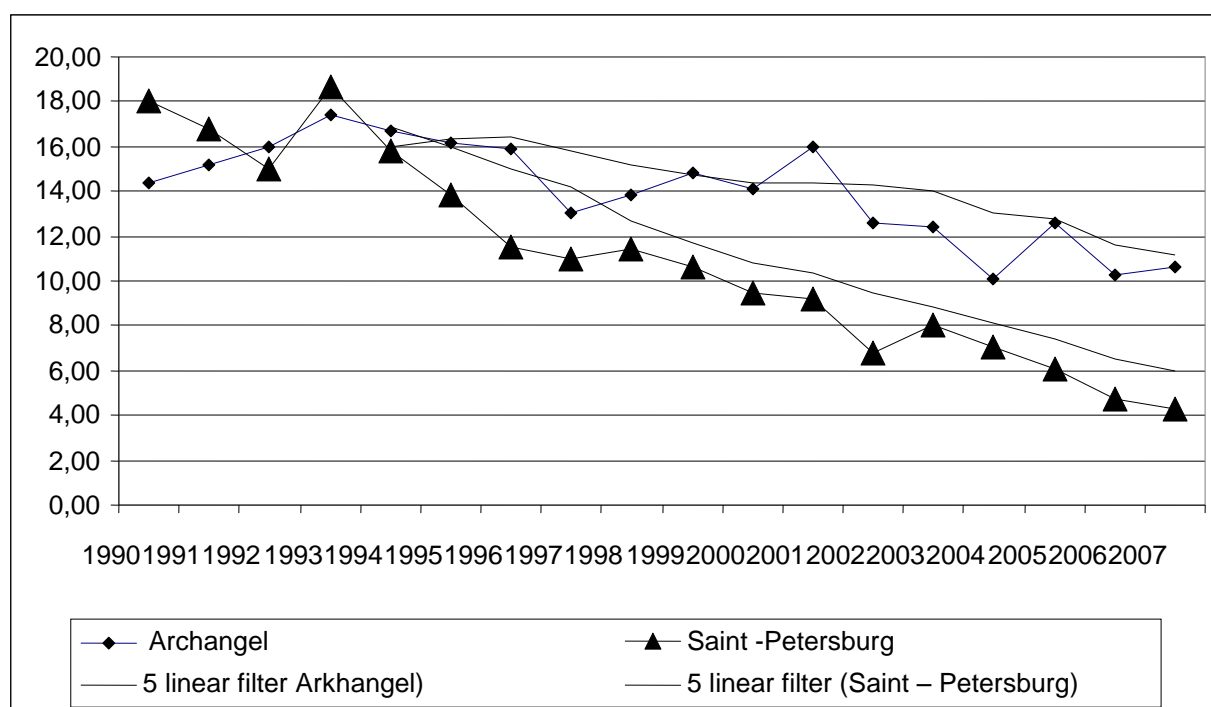
Lets see the connection of a more nuanced indicator bio indexation of a comfort of the human environment - Statistics of the primary disease (total population) with a diagnosis established for the first time in 2006-2007 life (Table 8).

It turns out that the highest frequency of incidence of primary total population in all disease entities has taken place, as expected, in the Nenets Autonomous region — 175571,40 per 100 thousand population total that is 3.3 times higher than in the Leningrad region and 3 times higher than in the whole of Russia. The second and third rank of morbidity in the Republic of Karelia and the Arkhangelsk Region, where incidence rates ahead of the Komi Republic, Vologda and Murmansk regions, St. Petersburg and Moscow - the probability of primary morbidity — 97498,30 per 100 thousand of total population.

**Infant mortality of population of all reasons of death in Russia and
NWFD in 1990–2008 (per 1000 born in one year,
Promile)**

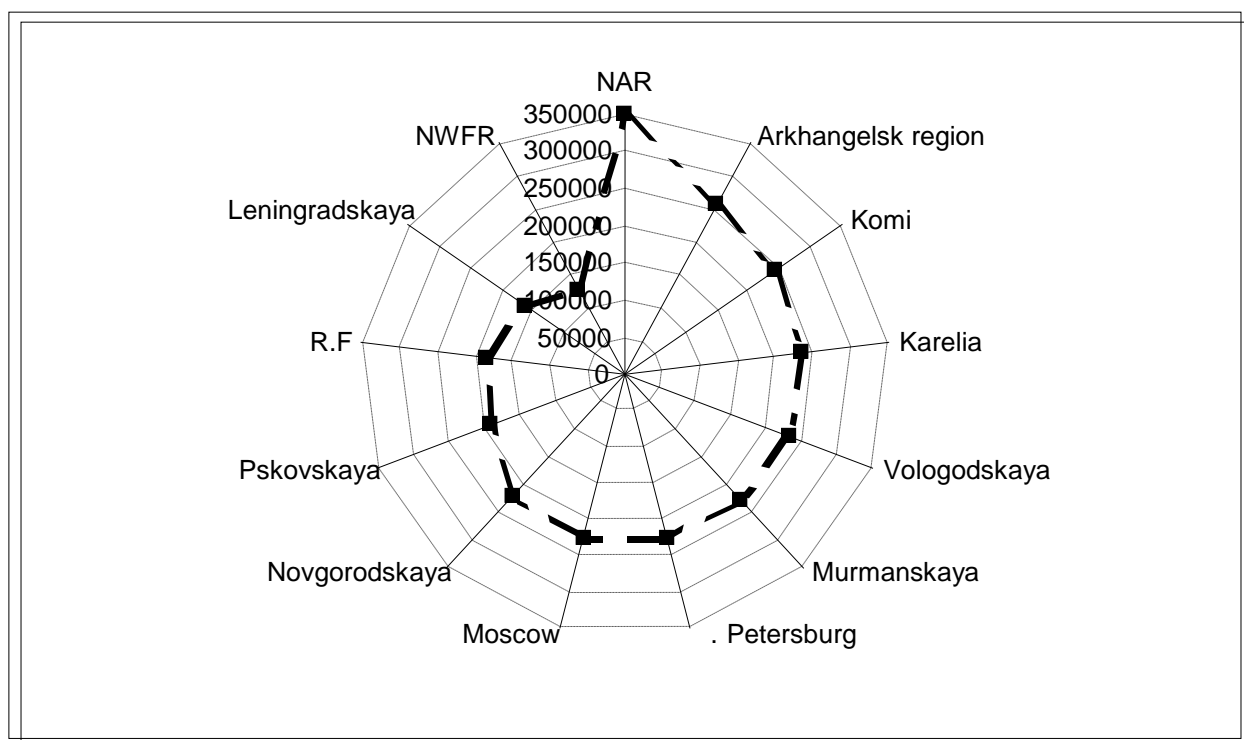
| | Russia | Karelia | Komi | Archangel | NAD | Saint Petersburg |
|------|---------------|----------------|-------------|------------------|------------|-----------------------------|
| 1990 | 17,40 | 14,00 | 16,50 | 14,40 | 28,20 | 18,00 |
| 1991 | 17,80 | 13,30 | 16,40 | 15,20 | 16,20 | 16,80 |
| 1992 | 18,00 | 15,20 | 17,30 | 16,00 | 25,20 | 15,00 |
| 1993 | 19,90 | 13,60 | 18,80 | 17,40 | 14,70 | 18,70 |
| 1994 | 18,60 | 13,30 | 21,40 | 16,70 | 19,20 | 15,80 |
| 1995 | 18,10 | 17,40 | 25,30 | 16,20 | 18,00 | 13,80 |
| 1996 | 17,40 | 13,20 | 16,90 | 15,90 | 23,80 | 11,50 |
| 1997 | 17,20 | 13,30 | 16,70 | 13,00 | 12,90 | 11,00 |
| 1998 | 16,49 | 15,26 | 16,88 | 13,88 | 19,54 | 11,40 |
| 1999 | 16,91 | 17,54 | 16,67 | 14,82 | 19,31 | 10,65 |
| 2000 | 15,33 | 14,36 | 12,98 | 14,14 | 24,36 | 9,46 |
| 2001 | 14,65 | 12,87 | 9,37 | 15,94 | 20,07 | 9,19 |
| 2002 | 13,31 | 10,01 | 10,94 | 12,61 | 18,17 | 6,80 |
| 2003 | 12,36 | 8,11 | 9,38 | 12,38 | 29,30 | 8,00 |
| 2004 | 11,57 | 9,71 | 8,62 | 10,10 | 9,91 | 7,07 |
| 2005 | 10,97 | 9,57 | 8,66 | 12,60 | 16,57 | 6,04 |
| 2006 | 10,22 | 7,64 | 6,98 | 10,23 | 15,16 | 4,71 |
| 2007 | 9,36 | 7,18 | 7,64 | 10,66 | 17,02 | 4,28 |

Resource: Central base of statistical data. Federal State Statistic Service



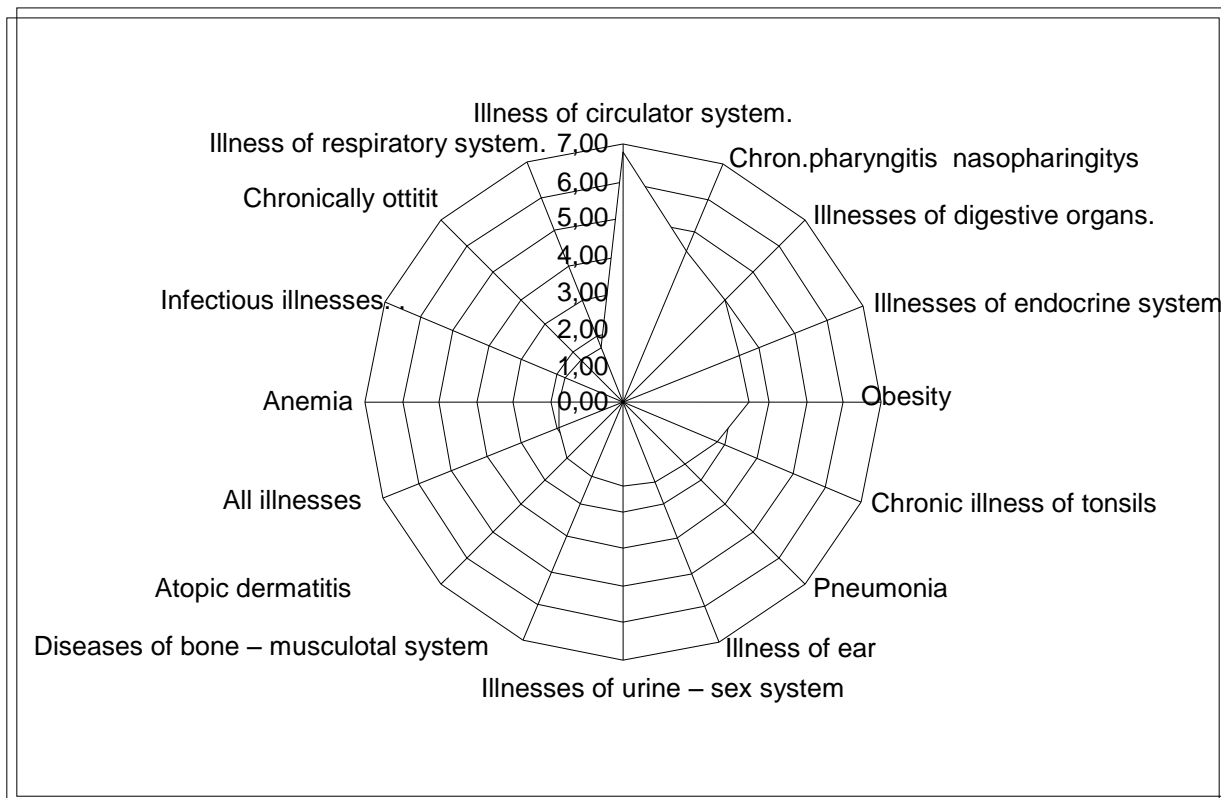
Pic. 1. The number of infant mortality on the first year of life per 1,000 live births per year, per thousand Ranking results of the primary disease of children (0 to 14 years) on the subjects of Russia in 2007-2008. confirmed previous results: the highest rate was again in the Nenets Autonomous region – 3461,46 per 1000 population from 0 to 14 years more than 2 times higher than in the Leningrad region (Fig. 3). And almost 3 times higher than in the North-West Federal District, and 2 times higher than in Russia. The second rank in the Arkhangelsk region – 2571.94,9 per 1000 population from 0 to 14 years. Owing to the nature of the spatial (territorial), the

frequencies of the primary disease of children (0 to 14 years), we can hypothesize: the power of epidemiological reasons for the NAO than those in more southern regions and major cities across the country, as well as in Russia in general.



Pic. 2. Ranking the incidence of primary children on the subjects of Russia for the years 2007 - 2008. Source: FSI "Russian Health Ministry TSNIIOIZ" - contents of the site www.mednet.ru.

To assess the existence of specific causes of child morbidity in the primary I Nentskii Autonomous Region (NAO), we calculated the dimensionless incidence of NAO / RF (Pic. 4). Have not been established specific determinants that cause the primary morbidity of children NAO respiratory diseases, infectious and parasitic disease, chronic otitis, and anemia. Thus, the cause of most of the nosological structure of incidence in the Arctic is not specific, non-linear, and, apparently, determined by multi sufficient cause. Unlikely, but we can not exclude the presence of specific causation in primary disease: chronic diseases of tonsils, atopic dermatitis, diseases of the genitourinary and musculoskeletal systems. In this case, climatic factors act as a necessary cause. Probably the same reasons there are against obesity, diseases of the endocrine system, digestive disorders, chronic pharyngitis, and diseases of the circulatory system.



Pic. 3. Ranking relationship of the primarily of child morbidity in the Nenets Autonomous Region (NAR) to the Russian Federation in whole in 2007-2008.

There is another problem. In Russia allocated 32 regions with the highest indexes of morbidity of the population obese. In the whole of Russia in 2009, the incidence of obesity was 789.3 per 100 thousand people, in the Altai Territory - 4580.1 per 100 thousand people, in Nenets Autonomous Region- 2225.0, in the Altai Republic - 2000.4.

In 51 subjects of the Russian Federation in the incidence of obesity-values are less than the average Russian levels. The best indicator of the Chechen Republic, where of indicators was 252.8 cases per 100 000 population. In all cases, the causes of obesity in the Nenets Autonomous District should be explored, and they can be eliminated. If we turn to food consumption, then in the Arkhangelsk region overall picture indicates poor dietary patterns of the population: only the consumption of bread does not cause concern. Very high intake of sugar, it is not enough milk, meat, fruits, vegetables and even potatoes.

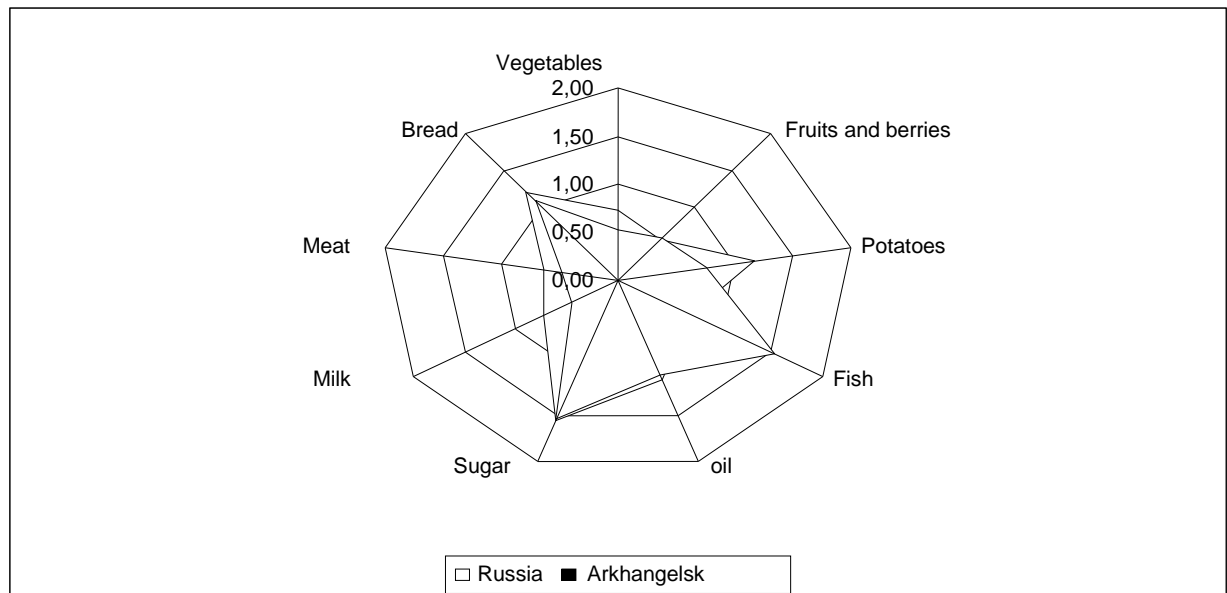


Рис. 4. To make the standards in supply of basic food products in the Arkhangelsk region in Russia in 2005–2009

From what to begin?

It will be better to turn to thoughts of M.V. University, which, in his famous letter to Shuvalov suggested that majesty, power and wealth of a nation lies not in its vast territory without inhabitants, and mainly in the preservation and reproduction of the Russian people. Repeatedly called attention to the efforts of the imperial power of Russia on the local population in the European North. In the Soviet period it was given special attention, and there even appeared on the largest number of cities.

The scientist-physiologist, a specialist in the field of natural adaptations, Professor Liliya Dobrodeyev, sees output in achieving social justice for the northerners living in her view, in uncomfortable environmental conditions of the European North. It is difficult to accept such a unilateral withdrawal, which are not fully correlated with health-demographic and epidemiological data on the Arkhangelsk Oblast and Nenets Autonomous District. We agree with those scientists and physicians who believe that a systematic analysis, identifying the general movement to some central concepts, dictated by the global challenge of survival of the human and health rights in the contemporary world, considering health as a public function of the system, where individual and public health act as a "system factor" and the external criterion of efficiency of society.

Must be eliminated permanently in regional studies underestimated the degree of scrutiny items and territorial relations (internal and external), which are a factor of stability and development [13]. Needed in this regard, clearly presents a dilemma - either to go to these costs, and get an unmistakable landmark development of the area for the future, or to act according to the rule "quickly and cheaply" and constantly reap the lack of validity of any

policy decisions, the low price which turns into an extreme state of the environment, countless economic damage and the growth of unresolved issues.

In Philosophy of N.F. Reimers [14] denotes the space of philosophy in the concept of "ecological infrastructure" that can greatly be attributed to the definitions of social ecology. The components of this structure have been identified as elements of the traditional social and productive infrastructure (monitoring, treatment facilities, utilities, services, drainage systems, dams, etc.) and set of specially protected areas and other facilities. If we consider human (the society) as part of the ecosystem along with the rest of its structural elements, environmental and social succession appear as parts of one process.

Conclusions

It is important refer to the idea of creating Please refer to the idea of a scientifically and socially-oriented program "Health for all northerners in the twenty-first century." She's in the life of one generation should provide:

- I. On the regional and on the municipal levels of social system of public health through intersectoral collaborationна, equity and accessibility;
- II. In the region should be created units (establishments) hygienic (sanitary) ecology
- III. Immediately required to establish a modern health care and epidemiological monitoring. Such monitoring is essential for prevention programs in every sphere of public health. It allows you to give to politicians, the public, on the one hand, a report on trends in health indicators, and on the other, - evaluating the economic efficiency of effort invested. Prevention programs in any field of public health can neither begin nor performed without performance monitoring of the epidemiological situation..

Literature

1. Kadoxov V.T. The role of the Finno-Ugric peoples in the development of ethno-cultural relations in the Russian Federation / / Horizons economic and cultural development: Proceedings of the Second Plenary Session of the North socio-environmental Congress / Ed. Ed. VA Chereshev. - Moscow: Science, 2007.
2. Lukin Y.F. the great retribution of Arctic: monograpy. - Arkhangelsk: North (Arctic) Federal University, 2010; Dregalo A.A., Ulianovskii V.I. The sociology of regional transformations: in 2 volumes. Monograph. - Arkhangelsk: North (Arctic) Federal University, 2010; Troshina T.I. .From Peter the Great to Stalin: A Social History of the Russian North (XVIII – first quarter of XX century.) Monograph in 2 hours. – Arkhangelsk: Pomeranian University, 2009.
3. Toinbi A. Dj. Study of History. – Moscow, 2002.
4. Davidov A.A. On the question of definition of society. URL: www.isras.ru/files/File/Socis/2004-02/adavydov.pdf (date of treatment: 24.09.2010).
5. Davidov A.A., Chyrakov A.N. The modular analysis and modeling of the society. - M.: Institute of Spectroscopy, 2000.
6. Gumilev LN Ethnogenesis and the Biosphere. 3rd ed. Stereotypic. – L.: Gidrometteo edition, 1990.
7. Volkov. YE Basic concepts of logic and sociological paradigm / / Sociological Studies. - 1997. - № 1. - S. 22-33.
8. Avtsyn AP, Lark, AA, AG Marach Pathology and other rights in the North. - Moscow: Medicine, 1985
9. Aghajanian, NA, Torshin VI Human Ecology. - M. Crook, 1994.
10. Isachenko AG, GA Isachenko Landscape-geographical principles for evaluating the ecological state of the environment / / Proc. Nauchn. Works. Geography and modernity / St.Petersburg State. Univ. - 1995. - Issue 7. - S. 18-44.
11. Razumovsky V.M Ecological-economic approach to the territories / / Proc. Science. Proceedings: Geography and modernity / St.Petersburg State. Univ. — 1995. - Issue 7. - S. 45-59.
12. Shraga M.H, Degteva G.N Factors of low intensity: Issues of Public Health / / Ed. Professor YR Tedder. - Archangel: AGMA, 1994.
13. Lexin V.N. Andreev, EN Regional policy in the context of the new Russian situation and a new methodology for studying it. - Moscow: Publish group "Progress", publishing house "Ekopros," 1993.
14. N.F Reimers resources: Glossary. - M., 1990.

Reviewer - Griбанov AV, MD, Professor,
Honored Scientist of Russian Federation..

