

# Justification of Preventive Antiparasitic Measures on Recreational Waters

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## Abbreviations

ELF - existing legal framework, KNMU - Kharkiv National Medical University, MPC - maximum permissible concentration, SRW – Scientific research work, ZWB - zones of water bodies

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## ABSTRACT

Aim: the visibility of the results of scientific rationale and development of antiparasitic events on a specific model of recreational water bodies of Kharkiv region with emphasis the necessity of accounting the problem of condition monitoring of sand on the beaches. Materials and methods: the state of pollution of the sand was estimated according to the following criteria: salts of heavy metals, organic compounds, pathogens (*E. coli*, *Enterococcus*, *Shigella*, and *Salmonella*), the presence of worms dangerous to humans. Laboratory study of sand were conducted before and after the swimming season. Results. According to the results of the research conducted in the period 2010-2014 it was found that out of 2333 samples of sand (soil) made in the locations of beaches on parasitological research, 173 - discovered threat to human health helminths (7,41%).

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**Key words:** *recreational waters, beaches, sampling, sanitary rules.*

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## Introduction

We know that the social and economic aspects of society are interrelated with the problems of recreational nature, which are characterized by economic, socio-cultural and biomedical functions. All three features recreational activities in each region of the country are closely linked and have a significant impact on the overall improvement of the socio-economic efficiency of social production (Fomenko, 2007, Andrusyak, 2010, Kilinskaya et al., 2010). Multidisciplinary note that the selection of the regions of Ukraine, the organization and the use of recreational resources in urban and suburban areas in modern conditions sometimes passes spontaneously, without taking into account health and environmental situation, which leads from one side to the negative impact on public health, on the other a significant excess of permissible loads on recreation (Shcherban et al., 2014, Myasoedov et al., 2014).

Tangible evidence of the relevance of the problem is the annual information chief state sanitary doctor of Ukraine and regional bodies of sanitary-epidemiological service of the lack of training of a large number of recreational areas in the waters to the bathing season.

Thus, according to the Main Department of the State Sanitary and Epidemiological Service in Kharkiv region, only registered is 116 beaches (located in the city and health institutions) and recreational areas. Of these, it was planned to open in the wellness season 2014 - 76 beaches. In fact, in 2014, we received a passport to the discovery of beaches only 20 (Litvinenko et al., 2014).

## Materials and methods

In HNMU together with the Ukrainian Research Institute of environmental problems and with the involvement of sanitary-epidemiological service targets the Ministry of Health carried out research work (SRW) "Ecological and hygienic substantiation of optimal levels of anthropogenic load on the recreational areas of pools of water bodies" (scientific director prof. N. Shcherban).

According to the results of research, reasonable and drafted new sanitary rules governing the requirements of recreation zones of water bodies (ZWB). It is proved that the existing legal framework (ELF) to areas of recreation water bodies are not fully contribute to the problem of optimizing the health system and public recreation on recreational waters

in accordance with the requirements of the Ministry of Health of Ukraine, as well as with modern requirements of the European Community.

In addition, it was found that the ELF does not contain the full requirements on the need to identify personnel and accounting information on the epidemiological situation in the areola placement recreational areas of water bodies (Shcherban et al., 2014, Myasoedov et al., 2014).

The aim of this publication is to highlight the results of scientific studies and the development of antiparasitic activities on a particular model of recreational water bodies of Kharkiv region with a focus on control of state accounting of sand on the beaches.

It should be noted that the existing sanitary rules Standard 17.1.5.02-80 "Hygienic requirements to areas of recreational water bodies" requirements on this issue no. Studies sand (soil) in the area of beaches conducted on the basis of institutions State Sanitary and Epidemiological Service in the Kharkiv region in the last 5 years (2010-2014.).

Assessment of sand was carried out according to the following regulations: Standard 17.4.3.01-83. The Nature Conservancy. Soils. General requirements for sampling. M., Standards, 1983; Standard 17.4.3.04-85. The Nature Conservancy. Soils. General requirements for the control and protection from pollution. M., Standards, 1985; Standard 17.4.3.01-83. The Nature Conservancy. Soils. Methods for the preparation of samples for chemical, bacteriological, helminthological analysis. M., Standards, 1983.

Status of sand contamination was assessed by the following indicators: salts of heavy metals (lead, cadmium, copper, nickel, zinc), organic compounds (benzene, xylene, toluene), pathogens (Escherichia coli, enterococci, shigella, salmonella), the presence of hazardous helminthisms human.

Laboratory research conducted sand before and after the end of the bathing season.

Samples for chemical, bacteriological and helminthological analysis were selected and evaluated based on the results of research in accordance with the requirements of sanitary rules and norms "Sanitary norms of allowable concentrations of chemicals in the soil" 42-128-4433-87; maximum permissible concentration of chemical substances in soil (MPC) of 01.02.1985 № 3210-85; State sanitary rules of planning and development of human settlements, approved by order of the Ministry of Health of Ukraine № 173 dated 19.06.1996 (Annex № 14); "Assessment indicators of soil health status of settlements", approved by the deputy chief sanitary doctor of the USSR of 07.07.1977 № 1739-77; Sanitary norms of allowable concentrations of chemicals in the soil Sanitary rules and norms 42-128-443387; MPC chemicals from 01.02.1985 № 3210-85; guidelines of the Ministry of Health of Ukraine from 19.06.1997 № 50-97.

## Results and Discussion

Beach sand is a huge natural laboratory, which are regularly held a variety of complex processes of destruction and synthesis of organic compounds, the formation of new inorganic compounds death of pathogenic bacteria, viruses, protozoa, helminth eggs and others.

According to the results obtained by research it found that over the last five years were noted pollution sand (soil) on the sanitary-chemical indicators (out of 500 tested samples exceeded the established standards was detected in only one).

The completed during this period 633 microbiological investigations in 10 samples of sand found pathogens (1.57%).

Parasitological studies of sand - during the 2010-2014. Research carried out in 2333, of which 173 - are found hazardous to human health helminths (7.41%).

Generalized results of studies of sand beaches of parasitic parameters are shown in Fig. 1.

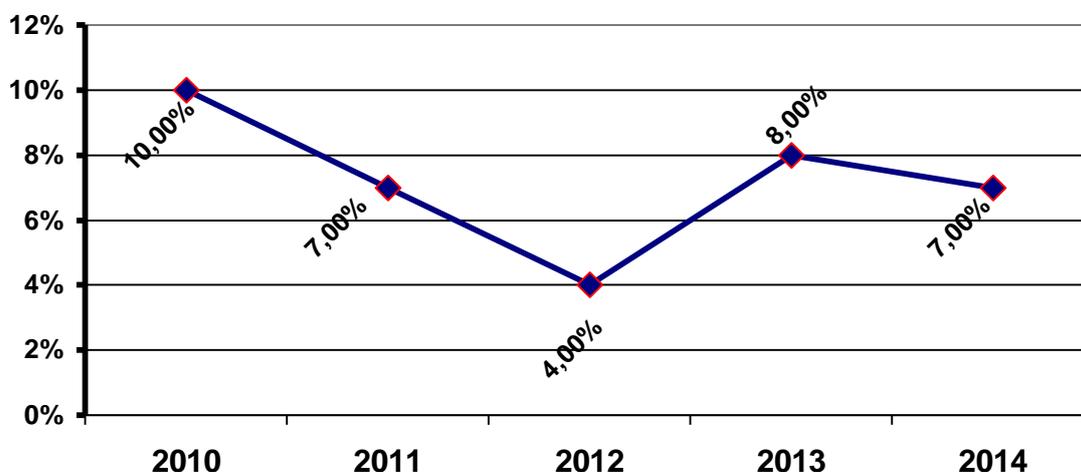


Figure 1. Dynamics of the State of the sand beaches of the recreational waters of the Kharkiv region of parasitic indices for the period 2010-2014.

The results of the above studies show that the balance-of beaches is not enough measures are being taken for improvement of beaches, including to hold annual bedding sand weekly mechanized loosening of the surface layer of sand with the removal of waste collected, as well as carrying out rodent control measures and the implementation of measures to hit an obstacle on the beaches of domestic and stray animals. However, at the same time it should be noted the lack of perfection of the existing regulatory framework governing the requirements for the preparation and operation of the recreational areas of water bodies.

Requirements to annual bedding sand and weekly mechanized loosening of the surface layer of sand are only in the state sanitary rules of planning and development of human settlements, approved by order of the Ministry of Health of Ukraine of 19.06.1996 № 173 and absent in the main document regulating the use of training and recreational areas of water bodies namely Standard 17.1.5.02-80 "Hygienic requirements to areas of recreational water bodies".

Requirements for the execution of the disinfection in placements recreational areas of water bodies referred solely to Article 16, 18, 33 of the Law of Ukraine "On protection of population from infectious diseases," but they are also missing from the Standard 17.1.5.02-80 "Hygienic requirements to areas of recreation water bodies".

The availability of the fence beaches, with the aim of getting to the beach obstacles domestic and stray animals, is generally absent in all the regulations.

Given the above it is necessary to carry out mandatory control laboratory research sand (soil) beaches in the implementation of sanitary and parasitological surveillance of recreational waters.

It is necessary to take into account the period of colonization of 4 parasitic pathogens: 1st - basic (March-May), 2nd - current year (June-August), the third - the main autumn (September-November), 4th - sporadic accidental Pollution (December-February).

## **Conclusions**

Contamination of sand (soil) on the beaches can be a potential danger to the health of travelers, especially in the "wild" beaches that do not have the relevant documents permitting.

Pollution sand beaches in the area of Kharkiv region in the last 5 years, an average of more than 7% of the total number of samples.

Prove that the existing legal framework governing the requirements for zones of recreations of water objects available in a large number of regulations, imperfect and in need of revision.

It is necessary to make to the regulations that govern the operation of the recreational areas of water bodies mandatory requirement to carry out control laboratory research sand (soil) beaches.

The main areas of population protection from parasitic diseases is parasitological surveillance, sanitary - hygienic measures and health education.

## **Prospects for further research**

Further studies, the prospect of seeing the practical implementation of the developed measures which are planned to be implemented in two stages.

On the ground - together with the institutions of the State Sanitary and Epidemiological Service and environmental agencies to implement at the regional, city administrations developed ecological and hygienic "Concept of improvement and protection of recreational waters in the Kharkiv region."

The second - to implement at the level of the city state administration is elaborated algorithm for creating an administrative structure - Working Group on the organization and control of the region and improvement of conditions of public recreation on water as part of specialists of all organizations and institutions involved in this issue.

Generalized consequences of long-term results of the above measures in the Kharkov region may have methodological value to other parts of the country and foreign countries.

## **References**

- Andrusyak NS. 2010 Common approaches to the evaluation of water resources with a view to their tourist and recreational use (review). Scientific Bulletin of Chernivtsi University. Vol. 519-520: 35-38.
- Fomenko NV. 2007. Recreational resources and balneology, Kyiv, 2007.
- Kilinskaya KI, Anipko NP, Konovalova NI. 2010. Theoretical and applied aspects of recreational nature in Ukraine, Chernivtsi, 2010.
- Litvinenko MI, Kryvonos KA, Shcherban M. 2014. Ecological and hygienic problematic aspects of recreational water. Epidemiology. Health. Infectious diseases. - Vol. 2 (11): 13-18.
- Litvinenko MI, Litvinenko GL, Shcherban MG. 2015. Modern problematic aspects of sanitary and ecological condition of recreational water reservoirs in Ukraine. Priorities of modern medicine: theory and practice. Odessa, 2015.
- Litvinenko MI, Litvinenko GL, Shcherban MG. 2015. State water pollution recreational waters Kharkov region. Medical science and practice of the XXI century: a collection of abstracts of scientific works of participants of the international scientific-practical conference. Kyiv, 2015.
- Litvinenko MI, Shcherban MG, Mahkota LS, Tonkoshkurov TI, Garnik V. 2015. Justification of the need for questions on surveillance in the regulations governing the requirements for water recreational areas. Epidemiological Research in clinical and preventive medicine: achievements and prospects. Kharkov, 2015.
- Myasoedov VV, Shcherban NG, Kapustnik VA, Vasenko AG, Litvinenko NI. 2014. Regional system of organization and control in the improvement of the population of recreational waters, Kharkov, 2014.
- Shcherban NG, Myasoedov VV, Kapustnik VA, Vasenko AG, Korobkova GV. 2014. Ecological - hygienic characteristics of the problematic aspects of water recreation in the Kharkiv region: innovative solutions to pressing problems of basic industries, the environment, energy and resources. Kharkov, 2014.