Keywords: wastewater, efficiency assessment, wastewater treatment, treatment facilities, local monitoring, chemical and technological control.

Minsk sewage treatment station is the most complicated industrial complex for cleaning domestic and industrial wastewater consisting of two production complexes: MSTS-1 and STP. The station collects and purifies wastewater generated in the city, as well as realizes collection and transfer for storage, burial, use and disposal of waste generated in the production activities of the enterprise.

Of the total volume of wastewater, there are approximately 30 % of industrial waters from more than 300 enterprises in Minsk. Currently, 500 thousand m^3 of sewage are generated daily, which are sent to Minsk sewage treatment station through the system of domestic sewerage. At the same time, the capacity of the enterprise can reach 800 thousand m^3/day [1].

During the local monitoring at the enterprise, the efficiency of wastewater treatment is evaluated. Local monitoring is carried out in accordance with the Regulation on the procedure for the local monitoring of the environment and use of its data as a part of the National Environmental Monitoring System in the Republic of Belarus, approved by the Resolution of the Council of Ministers of the Republic of Belarus on April 28, 2004, № 482 "On Approval of the Regulations on the Procedure as part of the National System for Monitoring the Environment in the Republic of Belarus monitoring surface water, groundwater, atmospheric air, local monitoring environmental monitoring and use of these monitoring data" [2].

To assess the effectiveness of wastewater treatment, a chemical and technological control of the sewage treatment plant is carried out. Chemical and technological control of the sewage treatment plant is carried out in the course of water movement at all stages of purification. Waste water is analyzed before the treatment facilities, after passing each treatment facilities and at the outlet to the pond. At the same time, the qualitative composition of incoming wastewater to the station is determined. Evaluation of sewage treatment efficiency is carried out according to 25 indicators [3].

The efficiency of wastewater treatment at the Minsk sewage treatment station for the period from 2012 to 2016 is estimated. Analysis of local monitoring data showed that there is a tendency in increasing the amount of ammonia nitrogen, phosphates, nitrites, nitrates, chlorides, sulfates, iron, copper, cadmium, lead and phosphorus in the wastewater that enter to the treatment plant. At the same time, there was a tendency in reducing the amount of suspended solids, dry residue, oil products and zinc in wastewater.

The calculation of the efficiency of wastewater treatment at the Minsk sewage treatment station showed that the degree of water purification at this enterprise is high and, on average, is 86,2 % [4].

BIBLIOGRAPHY

1. Technological regulations for the exploitation of sewage treatment facilities in Minsk.

2. Instruction on the order of organization and conducting of local monitoring of the environmental in UE "Minskochichstvod."

3. Instruction on the order conducting for chemical and technological control in UE "Minskochichstvod."

4. Report on the results of qualitative characteristic of sewage and surface water.

ECOLOGICAL PROBLEMS OF NON-IONIZING RADIATIONS

E. Kemesh, V. Malishevskiy

Belarusian State University, ISEI BSU,
Minsk, Republic of Belarus
kemesh.jenya@gmail.com

The effects of non-ionizing electromagnetic fields on living organisms, sources of increasing electromagnetic background, as well as problems of ensuring electromagnetic safety of man are discussed.

Keywords: non-ionizing radiation, electromagnetic field, electromagnetic smog, electromagnetic pollution, electric field, magnetic field, field strength.

Life on Earth was created many years ago, and for a long time proceeded in the conditions of relatively weak electromagnetic fields (EMF), which created only natural sources. These include the electric and magnetic fields of the planet, processes, which occurring in its atmosphere (lightning discharges, vibrations in the ionosphere), cosmic sources of radio waves (the Sun and other stars).

Only in the 19th century appears to base the approval on the relationship of electrical and magnetic phenomena. In 1887 H. Gertz fully confirms the theory of the electromagnetic field, created in 1864, without assuming that

soon this event will become a milestone not only in science and technology, but will also serve as the beginning of a fundamentally new situation on the Earth. The first radiogram of A. S. Popov with the word " GERTZ " practically became the starting point for the growth of the electromagnetic background of our planet.

The spectrum of electromagnetic radiations (EMR), mastered by mankind at the present time, is unusually wide – from extreme low frequencies (less than 1Hz) to gamma-ray and cosmic-ray frequencies (more than $3 \cdot 10^{21}$ Hz). As a result of the increase in the number of sources and the increase in the total power of EMF, a new term has appeared – "electromagnetic smog". EMRs with a frequency of less than 300 GHz are considered non-ionizing.

The active component of the Earth's own natural electromagnetic fields are their changes caused by the swinging of the magnetosphere by the ejections of the solar matter, the so-called magnetic storms. They cause a whole complex of changes in the parameters of the environment, up to the change in atmospheric circulation. In the process of evolution, biological objects have adapted to the presence of constant variations of the Earth's magnetic field, and the changes caused by them in the human body are within the limits of its adaptive capabilities.

Sources EMF, as a rule, are sources of complex electromagnetic radiation, which has an impact, in the territory of its influence, both on human and on ecology. Electromagnetic radiation occupies large areas and often violates the integrity of the range of distribution and migration routes of many animals.

Instead of traditional natural fabrics, which practically do not change the distribution of surface charges, synthetic products appear on the body, increasing the electric field strength by orders of magnitude. Tensions on the body surface vary from 20 to 200 V/m, reaching on top of 1000 V/m. If natural clothing practically does not change these values, the clothes of synthetic materials in motion create electric field intensity up to 14000 V/m.

Electromagnetic contamination of anthropogenic origin is extremely insidious. It remains unnoticed by the senses organs, although modern man is actually almost constantly exposed to artificial electromagnetic fields (AEMF). According to recent findings it electromagnetic smog is the main reason the so-called "chronic fatigue syndrome".

The problem of electromagnetic safety and protection of the environment from the effects of AEMF in recent decades, the relevance and social importance, including at the international level.The term "global electromagnetic pollution of the environment" was officially introduced in 1995 by the World Health Organization (WHO), and a number of international projects on this issue are currently being implemented under the auspices of WHO.

BIBLIOGRAPHY

1. *Malishevsky, V. F., Petrov, K. A.* Non-ionizing electromagnetic radiation and human Ecology, 2011. – No. 8. – P. 3–11.

2. *Gorbatov, S. A., Voronin, I. V., Naumenko, V. Yu.* Influence of electromagnetic radiation of household appliances on the human body, Med. physics. – 2007. – No. 1 (33). – P. 63–68.

ANALYSIS OF WATER CONSUMPTION AND WATER DISPOSAL OF JSC "MINSK PLANT OF WHEEL TENDERS"

Yu. Khodyko, K. Mukina

Belarusian State University, ISEI BSU,
Minsk, Republic of Belarus
yulia2570@gmail.ru

In this paper, an analysis of water consumption and water disposal at OJSC "MZKT" was carried out. The sources of water consumption and types of sewerage networks have been determined. The analysis of the documentation and data of water use accounting for 2016 is considered. The analysis of the discharge of pollutants with wastewater and measures for their reduction are carried out.

Keywords: water consumption and water disposal, pollutants, discharge of pollutants, wastewater treatment.

The paper considers the water consumption of the enterprise OJSC Minsk Wheeled Tractor Plant which produces special multi-wheeled vehicles, road trains, crane chassis and wheel chassis of high cross-country capacity and carrying capacity, trailers for oil, gas, timber, construction, geological exploration, municipal services, military industrial complex, as well as the release of spare parts for their products.

Water supply is provided from several sources:

- drinking – from 29 inputs fed from the networks of the managing company of the holding "BELAVTOMAZ";
- technical – their input, fed from the networks of the managing company of the holding "BELAVTOMAZ".