

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".

At the enterprise the source of hot water supply is its own boiler room.

The collection of rain and industrial wastewater is carried out by three issues in the network of the managing company of the holding BELAVTOMAZ. The domestic waste water is transferred to the management company of the holding company BELAVTOMAZ.

The volume of water consumption in 2016 amounted to 931,1 thousand m<sup>3</sup>, which is 34,0 % less compared to 2012 (1411,6 thousand m<sup>3</sup>). Reducing the volume of water consumption with increasing production volumes indicates an improvement in water use in the enterprise.

In 2016, the quality of drinking water was monitored for compliance with organoleptic microbiological indicators. Laboratory studies have confirmed that the quality of drinking water meets the requirements of SanPin 10-124 RB 99 "Drinking water. Hygienic requirements for water quality of centralized drinking water supply systems. Quality control".[1]

Accounting for water consumption and sanitation. Presentation of state statistical reporting 1-water (MNRE). Accounting for the number of water, wastewater and wastewater taken out is carried out in accordance with the agreement on the provision of services for the reception of drains into the rain water drain of JSC "MAZ" and their water disposal from the organization.

The organization with the participation of the managing company of the holding "BELAVTOMAZ" compiled an act of the boundary of the balance and operational belonging between OJSC "MZKT" and the management company of the holding "BELAVTOMAZ" for water supply and sanitation.

Based on the forms of the primary accounting documentation for the use of water, the main power engineering department compiles the "Report on the use of water" in the form of the state statistical reporting 1-water (MNRE) and until January 20 of the next year it is presented by the report of the Ministry of Natural Resources. [2]

The total gross discharge of pollutants was carried out within the established limits. The amount of pollutants allowed to discharge is: permanganate oxidation – 3,76 mg / dm<sup>3</sup>, suspended substances – 7,88 mg/dm<sup>3</sup>, petroleum products – 0,04 mg/dm<sup>3</sup>, BOD-5 – 2,95 mg/dm<sup>3</sup>.

Discharge of pollutants, exceeding the maximum permissible concentration, was eliminated through the implementation of the following measures: cleaning of wastewater discharge pipelines, grease traps and sedimentation tanks for catching fats and suspended solids.

For purification of the water withdrawn at the enterprise, a gas oil separator with an integrated sand catcher WMOK 20 DN 200 is installed. It is designed for sewage treatment from suspended solids and petroleum products. The oil and gas separator is installed underground.

For underground installation, technical wells and manholes are used. To improve the quality of wastewater treatment in 2017 an oil trap for the primary purification of oil emulsion effluents is planned. [3]

#### **BIBLIOGRAPHY**

1. SanPiN 10-124 RB 99 "Drinking water. Hygienic requirements for water quality of centralized drinking water supply systems. Quality control".
2. Environmental management system. Environmental management system. Operations management. Protection and use of water. Water supply and sanitation systems.
3. Program of measures for environmental protection for 2017.

### **SELECTION OF MODEL TREES OF SCOTS PINE TO OBTAIN DENDROCHRONOLOGICAL INFORMATION**

---

**A. Khokh<sup>1</sup>, O. Kvaschenko<sup>2</sup>**

<sup>1</sup>*SI «Scientific and Practical Centre of the State Forensic Examination Committee of the Republic of Belarus»,  
Minsk, Republic of Belarus*

<sup>2</sup>*Belarusian State University, ISEI BSU,  
Minsk, Republic of Belarus  
IannIhoh@gmail.com*

The paper discusses the rules that must be followed while selecting a planting model trees for the purpose of subsequent removal of dendrochronological samples (drill cores).

**Keywords:** Scots pine, dendrochronology, model trees, the annual ring width, radial growth

The individual characteristics of the growth of individual trees are caused by a wide range of micro-climatic, phytocenotic, forest pathology, forestry, recreational impacts on local plants and their habitat. In this way, radial