



Fig. 1. – Dynamics of changes in average annual concentrations of CO (left) and NOx (right) for 2010–2012

In Sterlitamak, 2010–2012 the concentration of nitric oxide (II) exceeded the MAC in 13 % of samples, ni-tric oxide (IV) – 12 %, nitric oxide – 50 %. The trend in the content of nitrogen oxides is different. For NO₂ and NOx, a decrease in concentration is noted, while for NO, an increase.

The content of SO₂ in the atmospheric air of Sterlitamak exceeded the MPC in 2010 32 % of the days, in 2011 – 15 %, in 2012 – 21 %. The highest average annual concentration of sulfur dioxide was observed in 2011, when at the end of March, November and December the content of sulfur dioxide reached 10 PDC.s.

The concentration of H₂S in the air of Sterlitamak was higher than the maximum permissible value in 2010, 14 % of days, in 2011 – 27 %, in 2012 – 36 %. For 2010–2012, there is a tendency to increase the concentration of hydrogen sulfide.

The quality of atmospheric air in Sterlitamak is mainly determined by the concentration values of such substances as carbon monoxide, hydrogen sulfide, sulfur dioxide. The indicator of airspace pollution is ozone, the concentration values of which for 2010–2012, evidence of anthropogenic impact on atmospheric air quality in Sterlitamak for more than half a year.

CONTENT ESTIMATION OF ORGANIC SUBSTANCES IN THE AMBIENT AIR OF THE STERLITAMAK CITY IN 2010–2012

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In order to provide the population with favorable living conditions in cities with a high level of technogenic impact, automatic air monitoring stations (ASKAV) are installed in the residential area. In Sterlitamak, I operate enterprises that continuously release gas mixtures containing toxic organic substances, the danger of which is determined by their high reactivity in atmospheric air. To assess the effectiveness of the introduction of the station, an analysis is made of the change in the concentration of organic substances, the sources of pollution of which can be various industrial enterprises, as well as motor vehicles.

Keywords: 1,2-dichloroethane, automatic ambient air monitoring station, benzene, vinyl chloride, pollutant, methanol, maximum permissible concentration, phenol, chloroform, ethylene, ethylbenzene.

The paper analyzes the experimental data obtained from ASKAV, located on the street. Furmanova, 33 city of Sterlitamak. At the station, continuous automatic measurement, processing, recording of measurement results of concentrations of 25 types of chemicals, including benzene, chloroform, ethylbenzene, methanol, toluene, α-methyl styrene, m, p-xylene, o-xylene, 1,2-dichloroethane, is carried out, ethylene, propylene, vinyl chloride, phenol, n-pentane. Also, identification of meteorological parameters, such as wind strength and direction, pressure, humidity, air temperature, and the amount of precipitation, is carried out.

For 2010–2012. there is an increase in the benzene content in the air of Sterlitamak. So, in 2010 there was no excess of the indicator above the maximum permissible value. In 2011, at 8 %, and in 2012 – 13 % of days, an excess of the MPC is recorded. Over the study period, the average annual concentration of benzene increased by 2330 %.

The content of chloroform in the air of Sterlitamak increased during 2010–2012 by 150 %. The number of days in a year when there is an excess of MAC concentration also increased and amounted to 10 % in 2010, 26 % in 2011, 40 % in 2012.

The concentration of ethylbenzene in atmospheric air is close to zero. In 2010 and 2011, no excess of the MPC was recorded. In 2012, 5 % of days marked ethylbenzene content above the maximum permissible and reached 3.5 MPC.

In 2010, there was an increase in methanol concentration above the maximum permissible threshold, which indicates a significant negative impact of anthropogenic sources of the substance on the quality of atmospheric air in the city. The content exceeded the MPC in 2010 44 % of the days, in 2011 – 17 %, 2012 – 30 %. The methanol content for the period under review decreased by 73 %.

During the period under review, the content of 1,2-dichloroethane decreased by 100 %. In 2010, the content of the substance in the atmospheric air exceeded the MPC for 2 days and amounted to 3.5 MPC. In 2011, an excess was noted for 4 days and the concentration reached 2 MPC. In 2012, the content of 1,2-dichloroethane varied within the permitted limits.

The ethylene content for 2010–2012. exceeded the maximum permissible value of 4 days in 2010 and 2011, when the concentration of ecotoxinant reached 3 MPC. In 2012, the concentration of the substance was lower than the MAC.

For 2010–2012. there is a tendency to increase the concentration of vinyl chloride. The concentration of the substance exceeded the maximum permissible values in 2010 16 % of the days, in 2011 – 28 %, in 2012 – 16 %. The highest content of vinyl chloride was recorded in 2010 and amounted to 77 MPC.

The content of phenol in the air of Sterlitamak tends to increase. The concentration of the substance exceeded the MPC in 2010 45 % of the days, in 2011 – 34 %, 2012 – 40 %.

The contents of toluene, α -methylstyrene, m, p-xylene, o-xylene, n-pentane in the atmospheric air of the city are close to zero. The concentration of substances recorded in 2010–2012. did not exceed MPC.

The quality of atmospheric air in Sterlitamak is mainly determined by the concentration of substances such as benzene, chloroform, methanol, vinyl chloride, phenol. The content of ethylbenzene, 1,2-dichloroethane, ethylene, toluene, α -methylstyrene, m, p-xylene, o-xylene, n-pentane is quite small, so their study is not advisable.

BIOINDICATION AS THE BASIC METHOD OF ANALYSIS OF THE ECOLOGICAL CONDITION OF THE DISTRICTS OF MINSK

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In this research the ecological state of the Sovietsky district of the city of Minsk on the example of the territory of the Druzhby Narodov Park was analyzed using the bioindication method. The result of the research has shown that Druzhby Narodov Park in its condition has 2 out of 3 possible points. The ecological condition of the park has also been estimated, and the ecological assessment of the park as a recreational area has been given.

Keywords: bioindication, assessment, ecological status, city park.

In recent decades, society has increasingly used in its activities information about the state of the environment. This information is needed in people's daily lives, in housekeeping, in construction, in emergency situations.

Nowadays the state of the environment increasingly depends on the development of public consciousness, understanding of the relationship between the natural environment and humans, the involvement of citizens, especially young people, in solving local and global environmental problems.

Green plantations are an integral part of urban area. They fulfill very important functions. Green plantations are the main means of city air renewal. They also have recreational functions. The main issue is the connection between Minsk parks and air pollution. As it is commonly known, green plantations clean the air from harmful emissions, gases and aerosols and make the technological method of air protection more efficient.

Druzhby Narodov Park has attracted our attention as it is located near our school.

The relevance of our research is in the estimation of the ecological condition of this recreational area.

As it was mentioned before the aim of our research is our personal estimation of the greenery and trees based on public ecological monitoring of environmental condition in Minsk Druzhby Narodov Park.

For accomplishment of our aim we have set the following tasks:

- To estimate the ecological condition of green plantations in Druzhby Narodov Park using botanical methods.
- To study the species of green plantations in Druzhby Narodov Park and to make the lists of general and most frequent species.