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Research of Environmental Problems in Industrial Cities

The current state of the environmental situation requires attention, particularly in the Dnipropetrovsk region. The concentration of industrial facilities in the region exceeds the average for Ukraine more than twice.

Gross pollutant emissions into the air are more than 1 mln. t per year. It is 17% of the national volume. The main sources of air pollution are industrial mining and metallurgy, fuel and energy, chemical and transportation systems. Air emissions are irregular. Air pollution is concentrated mostly in industrial zones. In most the cities of the region air pollution exceeds the standards in great number of indicators. Dnipro, Kamianske and Kryvyi Rih remain the most polluted cities in the region.

We have analyzed the air pollution dynamics in large industrial cities.

To assess the degree of total air pollution an integrated air pollution index (IAP) is used. It unites multiple impurities indicators. When $IAP \leq 5$, air pollution in the industrial city is below average. If $5 < IAP \leq 8$, then pollution is about equal to the average. If $8 < IAP \leq 15$, pollution is above average. When $IAP > 15$, the air pollution is significantly above the average.

The cities of Dnipropetrovsk region, which are characterized by the most significant air pollution, have been examined. The results of investigation of atmosphere state dynamics with the help IAP for years 2014-2015 shows that air pollution is higher than average. Furthermore, in some months it is essentially above the average. The estimated average air pollution index and monthly index changes for 2014-2015 are shown in Fig. 1.

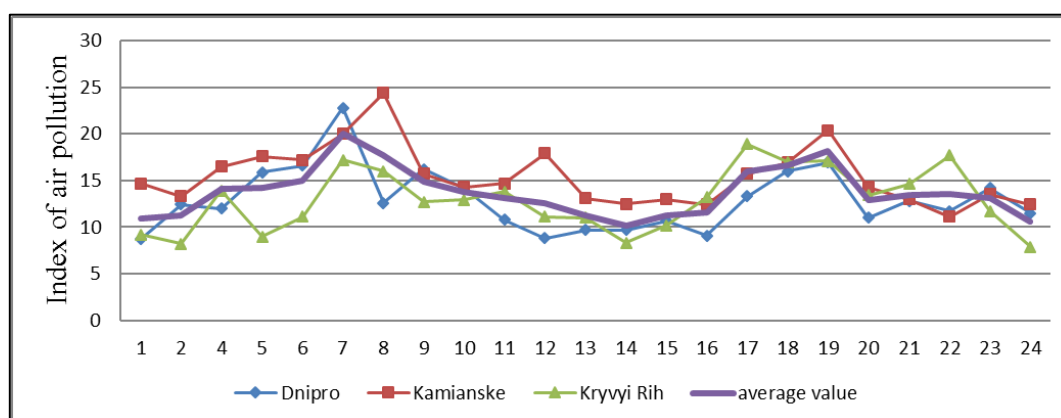


Fig. 1. Dynamic of air pollution index in the cities of Dnipropetrovsk region

The actual level of IAP for Kamianske is more than average for most of the study period. Kamianske has the most polluted air among the cities of Dnipropetrovsk region.

Fig. 2 shows the air pollution dynamics in the Dnipropetrovsk region according to seasons: 1 – winter, 2 – spring, 3 - summer 4 - autumn.

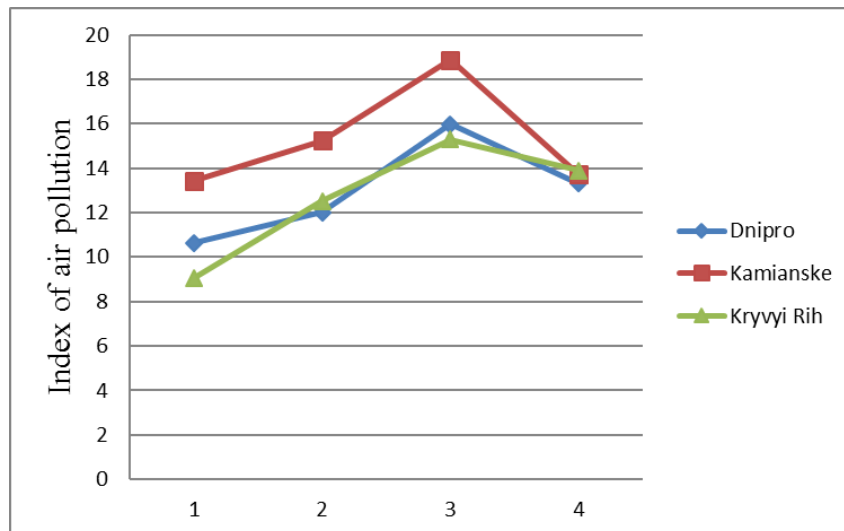


Fig. 2. The IPA dynamics in the cities of Dnipropetrovsk region according to seasons

The conducted research shows, impact of seasons on air pollution. In winter and autumn thanks to natural self-cleaning air pollution reduces. The factors are rain, snow and wind that reduce air pollution.

Since the air of the city is essential to the life of its inhabitants, one of the real possibilities of air improvement is to reduce emissions and contaminant concentrations in the adverse weather conditions periods.

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