WeBIOPATR 2021

The Eighth International WEBIOPATR
Workshop & Conference
Particulate Matter: Research and Management

Abstracts of Keynote Invited Lectures and Contributed Papers

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Vinča Institute of Nuclear Sciences

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ABSTRACTS OF KEYNOTE INVITED LECTURES AND CONTRIBUTED PAPERS

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11.12 LOCK-DOWN INFLUENCE ON AIR QUALITY IN BELGRADE DURING COVID–19 PANDEMIC

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The environmental Protection Agency of the Republic of Serbia continuously monitors and collects air quality parameters at many measuring points in the country. Those collected results indicated that the levels of air pollution recorded during the period of lockdown differed from the same period in the previous years. In this paper, we performed analysis of pollutant concentration trends in 2020 and a few previous years to determine the underlying causes of these trends.

The pollutants were measured at five stations in Belgrade: Beograd_Stari grad, Beograd_Novi Beograd, Beograd_Mostar, Beograd_Vračar, Beograd_Zeleno brdo, in 2017, 2018, 2019 and 2020, for the same period - from the beginning of March to the end of July. Measured values of pollutants were public data of the Environmental Protection Agency of Serbia. Measured values of nitrogen dioxide, sulfur dioxide and suspended particles PM10 and PM2.5 are average daily values, while for carbon monoxide and ozone, daily 8-hour maxima are shown, because no hourly data were available. Concentrations were compared and averaged only in cases where data were available for the same period over the years, i.e. comparison of 2020 with previous years.

The obtained values were compared with the annual and daily limit values (for ozone and carbon monoxide 8h maxima), and the differences in concentrations over the years were compared. The purpose of determining and presenting these values is to specifically indicate a change in air pollution during the isolation period due to the COVID-19 virus pandemic.

Analysis included data from automatic monitoring stations for main pollutants (CO, NO2, O3, PM2.5, PM10, and SO2) and meteorological parameters (t., RH, wind speed, wind direction) that are collected in agglomeration for Belgrade and the following is obtained:

1. Measuring station Beograd_Stari grad:
- 17% lower NO2 concentration compared to 2019, especially in the period of "lock down",
- reduction of PM2.5 concentration by 28% compared to 2018 and 3% compared to 2019,
- increase in PM10 concentration by 15% compared to 2018 and 18% compared to 2019.
2. Measuring station Beograd_Novi Beograd:
- eight-hour maximums of CO concentration are significantly higher by June compared to all three years,
- the average value of NO2 concentration is lower by 38% compared to 2019,
- the average value of SO2 concentration is significantly higher compared to previous years.
3. Measuring station Beograd_Mostar:
- the average NO2 value in 2020 was lower for 41% and 44% compared to 2019 and 2018 respectively,
- reduction of PM2.5 concentration by 3% compared to 2019,
- the average values of PM10 particles were lower by 61% compared to 2019 and 36% higher compared to 2018.
4. Measuring station Beograd_Vračar:
- the average value of SO2 concentration is significantly higher than in previous years; twice compared to 2018 and 46% compared to 2019.
5. Measuring station Beograd_Zeleno brdo:
- the average value of NO2 concentration was lower compared to 2017, 2018 and 2019 by 17%, 20% and 35% respectively.

Generally, for Belgrade in 2020: lower NO2 concentration at 4 stations; reduction of PM2.5 concentration at 2 stations; increase in PM10 concentration at 1 station, and also decrease at 1 station; eight-hour maximums of CO concentration higher at 1 station and SO2 concentration is higher compared to previous years (2017-2019).

REFERENCES

Public data of the Environmental Protection Agency (http://data.sepa.gov.rs/dataset?tags=Vazduh)

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