

# THE IMPACT OF AMBIENT SO<sub>2</sub> AND PM<sub>2.5</sub> CONCENTRATIONS ON AIR QUALITY IN URBAN AREAS OF TUZLA, LUKAVAC AND ŽIVINICE (2019 – 2024)

Maida Smajlović, Hana Alihodžić, Abdel Đozić, Mirnesa Čorbić

University of Tuzla, Faculty of Technology, Department of Environmental Engineering, Tuzla, Bosnia and Herzegovina



## 1. Abstract

Air pollution presents a significant challenge due to its negative impact on human health, the environment and its contribution to climate change and global warming.



## 2. Materials and methods

Air quality in Tuzla, Lukavac, and Živinice from 2019 to 2024 was assessed using data from the Cantonal Ministry of Spatial Planning and Environmental Protection.

PM<sub>2.5</sub> and SO<sub>2</sub> concentrations were measured using an API Teledyne - 100 analyzer at all locations.

## 4. Results and discussion

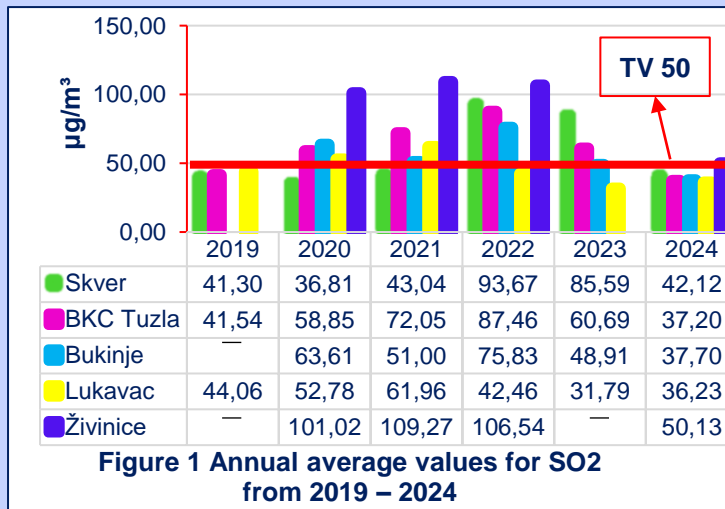


Figure 1 Annual average values for SO<sub>2</sub> from 2019 – 2024

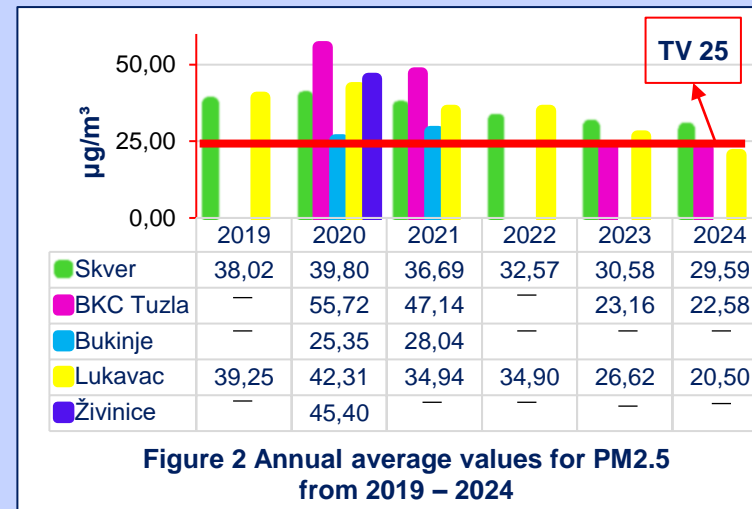


Figure 2 Annual average values for PM<sub>2.5</sub> from 2019 – 2024

Figure 1 presents the annual average SO<sub>2</sub> concentrations from 2019 to 2024 at the monitored locations in Tuzla, Lukavac, and Živinice. The highest levels were consistently recorded at the Živinice and Lukavac stations, with values exceeding the guideline value (TV = 50 µg/m<sup>3</sup>) in several years. This trend suggests a strong influence of local industrial activities and residential heating on air pollution. In contrast, the Skver and BKC Tuzla stations reported the lowest concentrations, indicating less direct exposure to major emission sources.

Figure 2 shows the annual average PM<sub>2.5</sub> concentrations. The results highlight that PM<sub>2.5</sub> levels exceeded the guideline value (TV = 25 µg/m<sup>3</sup>) in multiple years, particularly in Lukavac and Živinice. The persistently high PM<sub>2.5</sub> concentrations indicate a significant contribution from industrial emissions, vehicle traffic, and combustion processes. Despite some fluctuations, the overall trend suggests a need for stricter air pollution control measures in the observed areas. The findings emphasize the urgent need for improved air quality management, stricter emission regulations, and the promotion of cleaner energy sources to mitigate the adverse effects of air pollution on public health and the environment.

## 4. Conclusion

The highest levels of pollution were recorded in Živinice and Lukavac, while Tuzla stations showed relatively lower concentrations.

This pattern underscores the need for immediate action to improve air quality management.



## 5. Reference

Đozić A., Hodžić N., Selimbašić V., Stuhli V., Alihodžić H. (2018), Air quality pollution in tuzla and lukavac - comparative review for 2016. and 2017., ISSN 2303-5889