

## The Measurements of Nitrogen Dioxide Pollution in Street Canyons

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**Abstract :** The impact of urban air pollution on human health effects has been revealed in epidemiological studies, which have assessed the associations between various types of gases and particles and negative health outcomes. The percentage of population living in urban areas is increasing, and the assessment of air pollution in certain zones in the city (like street canyons) that have higher level of air pollution and specific dispersion conditions is essential as these places tend to contain a lot of people. Street canyon is defined as a street surrounded by tall buildings on both sides that traps traffic emissions and prevents pollution dispersion. The aim of this study was to determine the pollution of nitrogen dioxide in street canyons in Kaunas city during cold and warm seasons. The measurements were conducted using passive sampling technique during two-week period in two street canyon sites, whose axes are approximately north-south and north-northeast-south-southwest. Both of these streets are two-lane roads of 7 meters width, one is in the central part of the city, and other is in the Old Town. The results of two-week measurements showed that the concentration of nitrogen dioxide was higher in summer season than in winter in both street canyon sites. The difference between the level of NO<sub>2</sub> in winter and summer seasons was 5.1 and 19.4 µg/m<sup>3</sup> in the first and in the second street canyon sites, respectively. The higher concentration of NO<sub>2</sub> was determined in the second street canyon site than in the first, although there was calculated lower traffic intensity. These results could be related to the certain street canyon characteristics.

**Keywords :** air pollution, nitrogen dioxide, passive sampler, street canyon

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