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INFLUENCE OF CLIMATIC FACTORS ON THE POLLUTION WITH NITROGEN OXIDES (NO_x) IN BACAU CITY, ROMANIA

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Abstract

Air pollution has a significant impact on human health and natural ecosystems. The principal gaseous pollutants compounds result from different types of combustion processes. In this category there are included carbon monoxide (CO), carbon dioxide (CO₂), nitrogen oxides (NO_x), dust and hydrocarbons. Nitrogen oxides are a group of highly reactive gases, which contain nitrogen and oxygen in varying amounts. Most of the nitrogen oxides are colorless and odorless gas. This paper highlights the connections between air quality aspects in Bacau city by analysis of variance for the nitrogen oxides (NO_x) concentration and the most representative climatic factors. We used data recorded during 2010 at the Bacau Meteorological Station and at the air quality monitoring stations. These data were used to establish connections between cases where maximum allowable concentration are exceeded for nitrogen oxides (NO_x) and the variation of climatic factors. The analyzed climatic factors were: air temperature, atmospheric pressure, atmospheric humidity, solar radiation, wind speed and direction. Some conclusions of this paper have shown that the wind can intensify the action of the pollutant or a rapid dispersion. Wind direction influences the air quality in a specific urban area based on the shape and size of the city, the type and distribution of the main sources of pollution and geographic location. In the warm seasons in Bacau, strong solar radiation plays an important role in the activation of chemical reactions in the air due to pollution, especially with nitrogen oxides, which reacts with atmospheric oxygen, causing a complex series of photochemical reactions.

Key words: air pollution climatic factors, nitrogen oxides (NO_x)

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