



## **Spatial Variation of Nitrogen dioxide Concentration in Private and Public Hospitals of Rawalpindi and Islamabad, Pakistan**

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**Abstract:** Nitrogen dioxide has a significant contribution in the atmospheric chemistry, especially through photochemical oxidation of secondary air pollutants; imparting the phenomenon of environmental acidification. The NO in the atmosphere, both indoor and outdoor rapidly changes to NO<sub>2</sub> when released into the air. Moreover, the location of hospitals at the roads catering heavy traffic flow, adds to the NO<sub>2</sub> that is diffused into the hospitals. The focal intention of the study was to monitor the NO<sub>2</sub> concentration at the entrance of government and public hospitals of Rawalpindi and Islamabad. The time frame for the study was from March 2010 to June 2010. The diffusive passive sampling method was used for sampling the NO<sub>2</sub>. The concentration of NO<sub>2</sub> was estimated by carrying out laboratory analysis. The relationship between meteorological variables and NO<sub>2</sub> concentration was also anticipated to facilitate the study. The average concentration for NO<sub>2</sub> was established as 45µg/m<sup>3</sup> and 44µg/m<sup>3</sup> near the Hospitals of Rawalpindi and Islamabad, respectively. Spatial analysis clearly indicated that NO<sub>2</sub> concentration was high in the hospitals which were close to the main roads and was comparatively low for those hospitals that were located at the sub roads. Moreover, NO<sub>2</sub> concentration at all the sampling points was exceeding the Pak-EPA permissible standards of NO<sub>2</sub>. The study emphasizes the need to take appropriate steps to control these alarming levels of NO<sub>2</sub> concentration in life saving premises.

**Keywords:** *Nitrogen Dioxide; Air pollution; Passive sampling; Government/Private Hospitals; Rawalpindi/Islamabad, Pakistan.*

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