ABSTRACT

Being one of the most urbanized, Lahore faces challenge of smog every year and is considered as its fifth season. Such is the gravity of situation that Lahore is ranked high in the cities with worst air quality. This study involved the continuous monitoring of atmospheric gases (CO, O_3, NO, NO_2 and SO_2) for an extensive period of five months through Haz Scanner Model HIM-6000 at Lahore, Pakistan. The novelty of the study lies in the monitoring period as no prior research has been conducted for such extensive period. The reliability of data and continuous monitoring serve to provide air quality profile of the city. This study gives an overview of the trends of gases in winter season and particularly in the smog season. Moreover, the relationship of O_3 with NOx is also investigated. An effort is also made to relate higher concentration of gases with bad weather conditions such as haze or smog which results in damaging human health, closure of schools, road accidents and delay in flights. Concentration of SO_2 exceeded the EPA and WHO Standards in most of the study period. CO concentration exceeded twice the WHO and EPA standards in the month of November. NO concentration exceeded several times and exhibited double peak: morning and evening. Investigation of O_3 relationship with NOx revealed that O_3 shows inverse behavior with NO and NO_2. Lastly, recommendations are also offered to uncover the root causes behind the recurrent smog episodes in the bid to avoid this recurrence and help improve Lahore's air quality to provide citizens with clean air to breathe in.