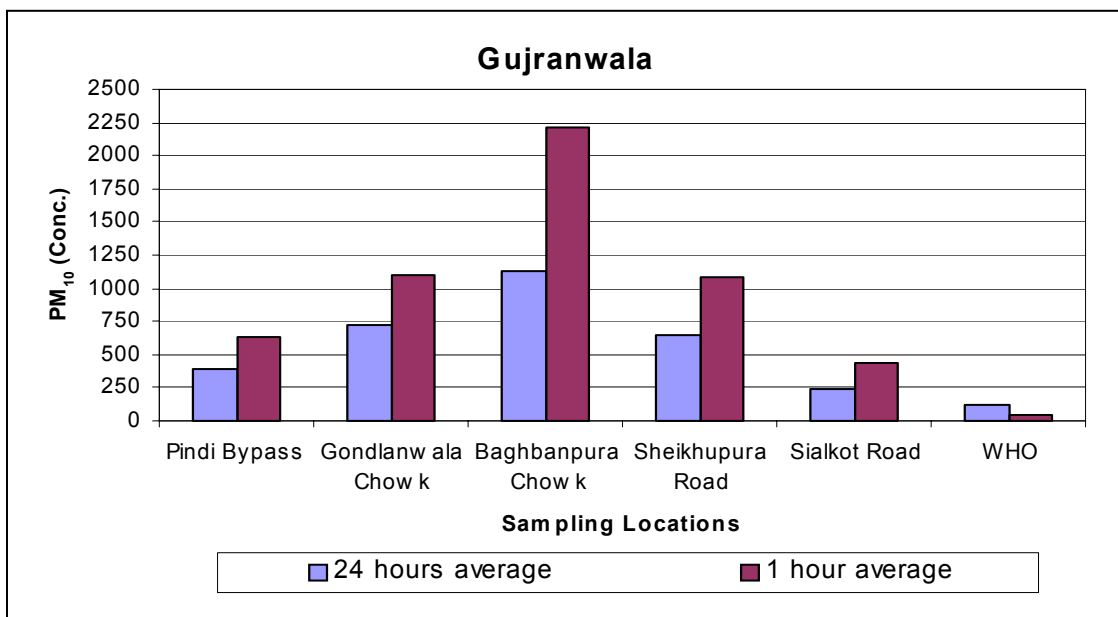


Ambient Air Quality in Pakistan

Air pollution is an emerging environmental issue in major cities of Pakistan. In the year, 2004 – 2005, Pakistan achieved the growth rate over 8% especially in the service sector. This results rapid growth of infrastructure in cities together with growth in road transport. For the last few years, due to the liberal leasing system adopted by the financial institutions, the density of transport has increased many folds on the roads of Pakistan. The present cities roads infrastructure cannot cater the need of growing automobiles flow. The result is the worsening condition of ambient air quality in Pakistan cities.

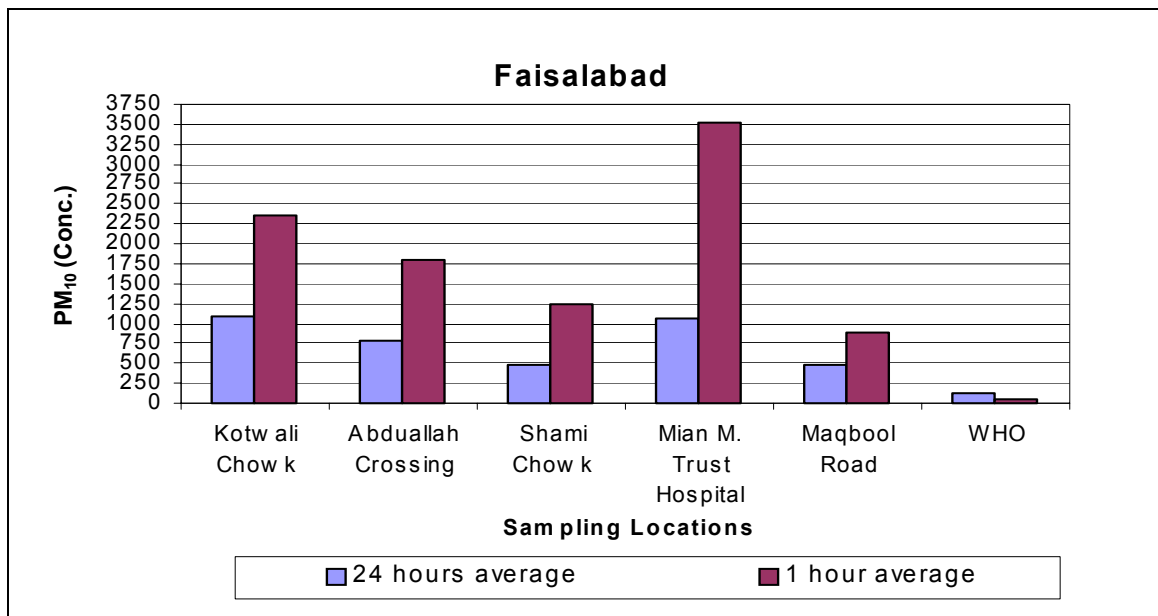
Pakistan Environmental Protection Agency (Pak-EPA) has conducted number of studies to investigate the ambient air quality in the major cities of Pakistan. Some of these studies were technically and financially supported by the Japan International Cooperation Agency (JICA). All these studies revealed that the number one problem relevant to the ambient air quality is the Particulate Matter (PM). PM (both TSP and PM₁₀) concentration in all major cities are extremely high. According to the Pak-EPA/JICA three cities investigation report¹, very high concentration of TSP and PM₁₀ has been recorded at Lahore, Rawalpindi and Islamabad. The concentration of SPM in these cities are 4.4 to 7.5 times higher than WHO Guidelines.

According to Pak-EPA investigation on ambient air quality in Gujranwala and Faisalabad², all sampling locations showed very high concentration of TSP and PM₁₀, if compared with WHO Guidelines. In Gujranwala, the particulate problem is more serious than in Faisalabad. TSP concentration (24 hour average) reached to 5190µg/m³ at Baghbanpura chowk in Gujranwala, which was more than 30 times higher for 24 hours average and 44 times higher for 1 hour average according to WHO Guidelines. Following figures show PM₁₀ concentration at various locations in Gujranwala and Faisalabad compared to the WHO Guidelines for 24 hours average and 1 hour average.



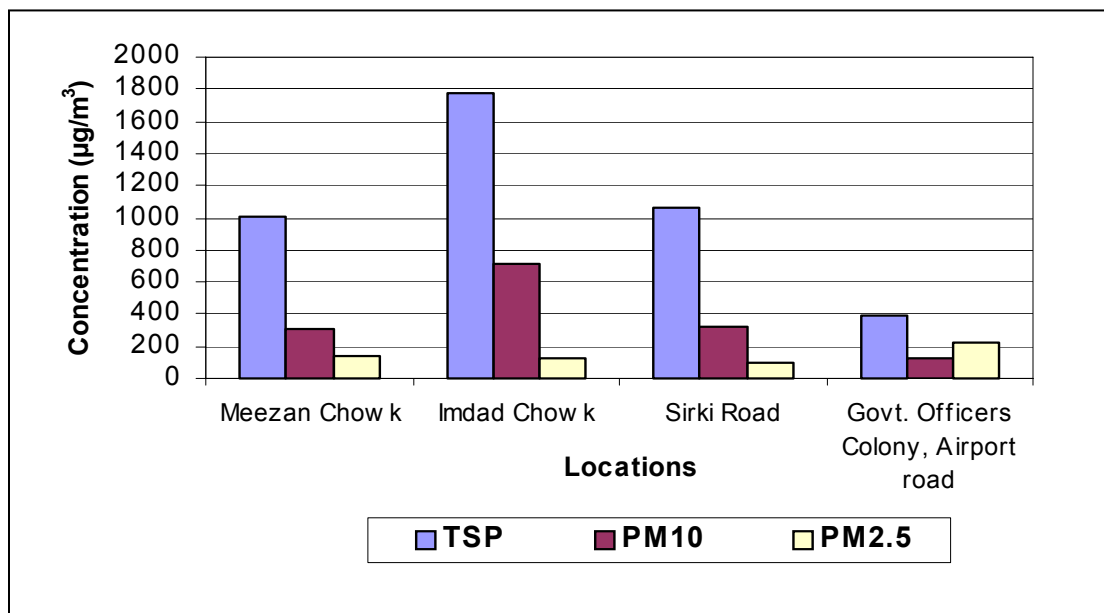
¹ "3 Cities Investigation of Air and Water Quality (Lahore, Rawalpindi, Islamabad)", June 2001, Pak-EPA/JICA

² "2 Cities Investigation of Air and Water Quality (Gujranwala and Faisalabad)", October 2003, Pak-EPA/JICA



In the very recent investigation conducted by Pak-EPA in Quetta on ambient air particulate matter revealed that Imdad Chowk is the most polluted location compared to other locations in Quetta due to the high density of traffic at this point. Following figure shows the concentration of TSP, PM₁₀ and PM_{2.5} at different sampling sites in Quetta.

TSP, PM₁₀ AND PM_{2.5} CONCENTRATIONS AT DIFFERENT SAMPLING SITES IN QUETTA

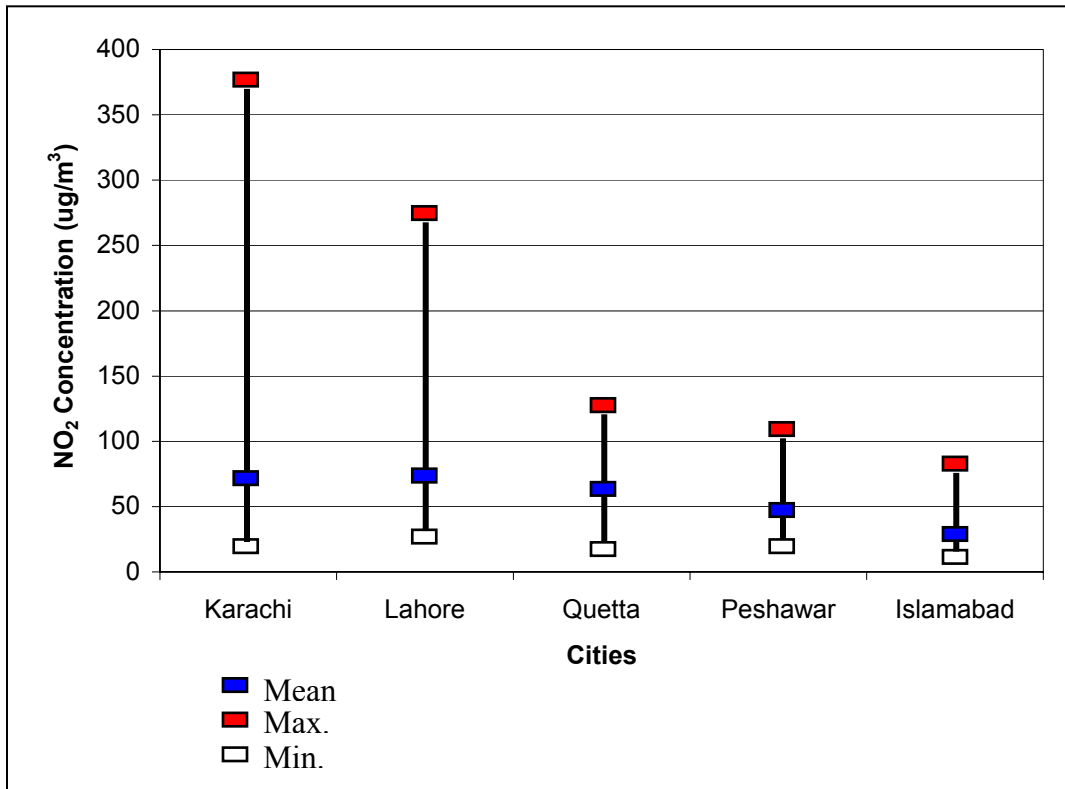


The second emerging air pollutant in Pakistan is nitrogen oxide. In the recent years in the world interest in NO₂ as an air pollutant is growing not only because of its phytotoxic nature but also on account of growing evidence of its adverse effect on human health.

¹ "Ambient Air Particulate Matter and water Quality Investigation in Quetta", May 2006, Pak-EPA.

Pak-EPA has taken lead and carried out through investigation of NO₂ in all major cities (Karachi, Lahore, Peshawar, Islamabad and Quetta)¹ to determine its present level so that the future strategy could be chased out to safeguard the public from its adverse effect. The following figures show Nitrogen dioxide (NO₂) pollution in different cities of Pakistan.

NITROGEN DIOXIDE (NO₂) POLLUTION in DIFFERENT CITIES of PAKISTAN



In this figure mean, maximum and minimum values are given. The highest concentration of NO₂ was found in Karachi and then descending to Lahore, Quetta, Peshawar and Islamabad. It reflects the high density of traffic locations in all five cities by averaging the all NO₂ values, Karachi and Lahore have shown the similar average concentration of NO₂ i.e., 76µg/m³. The average concentration of NO₂ in Quetta, Peshawar and Islamabad were 69.50, 47.28 and 30.41µg/m³ respectively. The least minimum vale of NO₂ in Islamabad was found in the residential area embassy road, which was 11.65µg/m³. The highest concentration of NO₂ 399.65µg/m³ was found at Karimabad Junction in Karachi.

Pak-EPA is carefully monitoring NO₂ concentration in these cities because it is precursor to secondary particulate formation and also ground level ozone formation, which may become a problem in future.

¹“Measurement of NO₂ concentration in different cities of Pakistan using Diffusion samplers (Karachi, Islamabad, Peshawar, Lahore and Quetta), April 2006, Pak-EPA/JICA

Under the given backdrop project- “Establishment of Environmental Monitoring System” was approved by ECNEC at an original capital cost of 1,089.10 million by CDWP on February 18, 2003. This project is being implemented under Japanese grant of JPY 1238.0.

The project envisages:

- i. Provision of continuous air monitoring stations and mobile laboratories in five cities (Karachi, Lahore, Peshawar, Quetta and Islamabad)
- ii. Provision of continuous water monitoring stations and mobile laboratories in six cities (Karachi, Lahore, Peshawar, Quetta, Rawalpindi and Islamabad).
- iii. Up-gradation of analytical laboratories in five EPAs
- iv. Establishment of air and water surveillance
- v. Provision of necessary project staff
- vi. Training