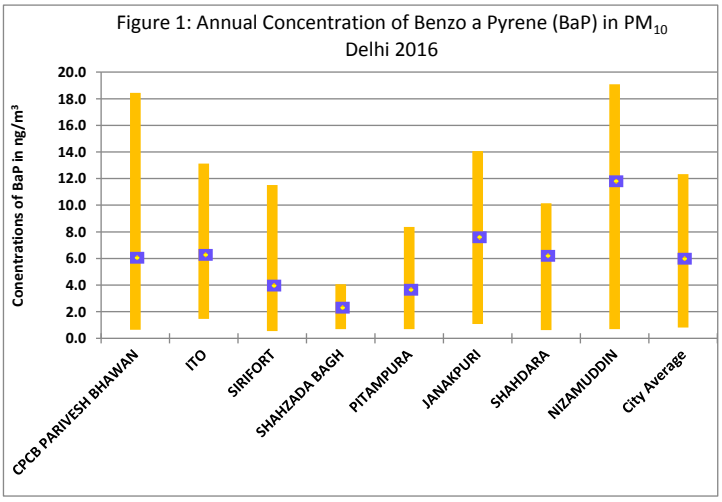
CENTRAL POLLUTION CONTROL BOARD
(AIR QUALITY – II DIVISION)

Air Toxics in Ambient Air of Delhi

1. Particulate Phase (PM_{10}) Benzo (a) Pyrene in Delhi

Central Pollution Control Board has notified Benzo (a) Pyrene in particulate phase (PM_{10}) in ambient air. CPCB is conducting regular monitoring at 08 NAMP stations in Delhi.

The representative samples are processed for the analysis of Benzo (a) Pyrene (PAH). The annual average concentration values of B(a)P varied spatially. The 24 hourly concentration range of B(a)P across the stations are lying between 0.9 to 18.0 ng/m^3. The maximum i.e. 18ng/m^3 was reported Nizamuddin station. The annual average concentrations at all the stations in the city varied widely between 2.3 to 11.8 ng/m^3. Parivesh Bhawan and Nizamuddin have recorded maximum variation while least at Shahzadabagh. The annual average concentration of the city was reported high enough (6.0 ng/m^3) compared to notified standard (1.0 ng/m^3). There is a limitation of this study. As the method IS 5182 Part 12: 2004 reaffirmed in 2009 was followed; the range of detection for B(a)P in this GC FID the method is 0.9 - 50 ng/m^3, many results of 24 hour samples were falling below detection limit and so the annual average may not represent the true picture in this case. As the Detection Limit and notified concentration are very close, the detected samples are mostly violating the NAAQS standards. So, here the highest concentrations reported are the major concern.



The monthly concentration value of B(a)P as represented in the Figure 2; shows marked seasonal variation. The building up of concentration of B(a)P was evident during October to March . The December-January months are worst affected may be due to inversion effect coupled with burning of wood and trashes in winter long range transport from agriculture residue burning in Punjab & Haryana. April onward the concentrations go down, which may be correlated with better dispersion. The values reported during monsoon are always low as usual due to flushing of particulate through precipitation.

2. Benzene in Ambient Air during Deepawali

Central Pollution Control Board has notified revised NAAQS in 2009 and Benzene is included as one of the 12 notified parameters. The annual prescribed standard for Benzene is 05 $\mu g/m^3$. There is no short-term standard for benzene. Unfortunately, this neuro-toxic organic pollutant is a constituent of gasoline and urban areas are facing the threat of vehicular pollution. Tremendous increase in vehicle number and consumption (Filling station) of gasoline in a tropico-temerate climate has aggravated the problem. India is having the most stringent standard for Benzene. Although Benzene can be monitored by both manual and real time method, use of manual method for Benzene is manpower intensive and an expensive proposition to satisfy the requirement of NAAQS (104 days 24 hourly data). Real time analyzers in CAAQM stations are more suitable for benzene monitoring under NAMP.

In 2016, CPCB undertook a study to measure Benzene during Deepawali. The Pre-Deepawali monitoring was conducted on 24th October (a week before Deepawali) and similar monitoring at three stations was conducted on Dhan Teras (28th October) and Deepawali day (30th October). Three selected stations are Parivesh Bhawan, ITO and Pitampura.

It was observed that during all three days the Benzene concentrations at selected stations has violated the annual standard. It is also pertinent to mention that the 24 hourly values reported are not justified to be compared with annual standard, however; it may be noted from the health perspective that during these festive days people get exposed to critically high benzene concentrations. The data shows that Dhan Teras day is the worst one as traffic movement gets maximum sluggishness and jam in all routes in Delhi. As there is sharp increase in number of vehicle plying and duration of idling increases highly, causing more emission of Benzene, among the three stations ITO got worst affected on Dhan Teras day. It was also evident that Deepawail day was comparatively better in case of Benzene and it may be attributed that vehicular emission is more responsible and bursting of crackers may not contribute to Benzene emission too much.