TREND ANALYSIS OF AIR POLLUTANTS

Trend analysis is a form of comparative analysis that is often employed to identify current and future movement of pollution level. The process may involve comparing past and current levels of pollution as they are related to various sites. This type of information is extremely helpful to make decisions and future predictions.

In this chapter trend analysis of air pollution have been depicted. For this purpose the data of air pollution related to January, 2006 to December, 2010 has been taken into consideration. The trends of individual pollutant in the city a whole has been carried out and trend analysis for each pollutants at various sites for the above period has been analyzed. The trends analysis has also been compared with the NAAQ standard for each individual pollutant to identify whether the level of pollutants is below or above the NAAQ standard level.

An attempt has also been made to analyzed the seasonal variation in the level of pollution in the various sites in summer, monsoon and winter. Air quality assessment has been made to identify whether the pollution are actually violate the standards or in the stage of likely to be violate the standards in the future if pollution condition to change at the current level.

FIGURE 3.1
TREND ANALYSIS OF AIR POLLUTANTS IN AGRA CITY

![SO₂ graph]

Page | 56
The level of NO$_2$ during the period of study has been fluctuating and ranges between 8.98 to 36.50 µg m$^{-3}$ as compared to NO$_2$ level in Agra. It exceeds the NAAQ standards level in the year 2008 to 2010. The NO$_2$ level shows the increasing trend during the study. The graph above shows the level of SO$_2$, NO$_2$, PM$_{10}$ and TSPM for a period of five years (from 2006 to 10). The level of SO$_2$ in Agra city has always been far below the NAAQ standard throughout the study period ranging between 3.73 to 9.75 µg m$^{-3}$ level. During the five years it has also been noticed that level of SO$_2$ generally increases during the winter season. The reason for the increase may be due to the facts that during the winter the atmosphere is stable due to low temperature and low wind speed so that the pollutants do not get dispersed.

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As regard to PM$_{10}$, its level has always been far above the NAAQ standard. It ranged from 67.6 to 366.80µg m$^{-3}$. It has been noticed that level of PM$_{10}$ has increased during winter season and also recorded high level of PM$_{10}$ in winter at Agra. Similarly, the level of TSPM in Agra has been observed to high above the NAAQ standard. It ranges between 158.00 to 662.40 µg m$^{-3}$. In certain months the level of TSPM in Agra is more than 11 times from the NAAQ standard. The high level of both PM$_{10}$ and TSPM are probably due to suspended soil particles apart from anthropogenic aerosols. Agra lies in a semi-arid area and also almost two third of its peripheral boundaries are surrounded by the Thar Desert. High level of TSPM and PM$_{10}$ can also be attributed to additional contribution from desert storms which are frequent in the summer months.
The level of SO$_2$ at all the sites has been within the limit of NAAQ standard. However among the sites, the level of SO$_2$ was recorded to be least at the Dayalbagh site.