

# A Study on Air Quality Index at Ida Pashamylaram in Hyderabad

<sup>[1]</sup> E. Dayana Krishna Veni, <sup>[2]</sup> Rupendra Duggirala

<sup>[1]</sup> Btech student <sup>[2]</sup> Assistant professor

<sup>[1][2]</sup> Department of Civil Engineering, Marri Laxman Reddy Institute of Technology and Management, India

**Abstract:** -- A seasonal variation of SO<sub>2</sub>, NO<sub>2</sub>, PM<sub>2.5</sub>, NH<sub>3</sub>, CO, OZONE and PM<sub>10</sub> at one fixed monitoring site with in Hyderabad city. Now here we are calculating the limits of the taken parameters. The values are taken as per the permissible limits of CPCB. The values are to check and control the pollution. Hyderabad is a polluted city so the values are calculated at one station of the duration of three months the given values are taken by the help of CPCB This trend is almost same in one station, for the duration of three months from December to February. In rainy and winter season the air quality is less. By the satellite help the values are induced in the monitor by that monitor we collected values and plot the graphs. The minimum and maximum values of taken area are PM<sub>2.5</sub> the least value is 10 µg /m<sup>3</sup> it is said to be as good and the highest value is 190 µg /m<sup>3</sup> it is moderate. PM<sub>10</sub> the least value is 14 µg /m<sup>3</sup> it is good and the highest value is 159 µg /m<sup>3</sup> it is moderate. NO<sub>2</sub> the least value is 9 µg /m<sup>3</sup> it is good and the highest value is 86 µg /m<sup>3</sup> it is satisfactory. NH<sub>3</sub> the least value is 1 µg /m<sup>3</sup> it is good and the highest value is 4 µg /m<sup>3</sup> it is also good. SO<sub>2</sub> the least value is 1 µg /m<sup>3</sup> it is said to be as good and the highest value is 87 it is satisfactory. CO the least value is 9 µg /m<sup>3</sup> it is good and the highest value is 97 µg /m<sup>3</sup> it is satisfactory. OZONE the least value is 2 µg /m<sup>3</sup> it is good and the highest value is 59 µg /m<sup>3</sup> it is satisfactory. These limits are taken by the help of CPCB.

**Index Terms:** - CPCB, Pollution, Particulate, Gases and Sensors

## INTRODUCTION

Air quality means the degree of air in a particular place. In general the air is very important to the life. The AQI calculate the variations of parameters what we taken in the project. Clean air is the basic important thing in the life. If the air is polluted it may cause danger to life and it reduced the deaths in the earth. Because of industries the pollution occurred by the releasing of waste water, gases, different types of chemicals, releasing of cement powder by construction the throat infection is occurred, while doing dumping of mud at the sites the air pollution is occurred, by cutting of steel rods also the air pollution also air pollution while human is done.

Because of the air pollution the two million deaths are occurred in the earth.

In case if the permissible limits are exceeding the health problem occurred high for urban areas. There is a so much of problem for urban areas only, while the vehicles are on the road the releasing of gas produced high air pollution.

More than half of the air pollution disease burden disease burden is borne by the pollution of developing countries. Globally, air quality guideline is designed to offer guidance in reducing the adverse health impacts of these pollution.

Air pollution is a environmental problem the effects of air quality is high in the Hyderabad so we take the area. The effects are asthma attacks, health effect, lung disease. If the air is polluted highly it may cause to hospitalization the NH<sub>3</sub> is high the coughing problem is attack and the throat irritation. If the SO<sub>2</sub> is high then the tight feeling around the chest and they cause leads to death at last stage. The WHO says that the more than two million premature deaths are occurred in the world.

By the AQI standards the many countries are risk to management and the air quality is high in the countries because the summer season the levels of AQI did not exceeded and the more than two million deaths are occurred while taking the AQI values we could be able to understand the each and every point and the Industries so many premature death's are done.

With an increased pace of Industrialization especially in developed countries, environmental problems have also increased. At the same time, with growing population, economic development and increased transportation sources, there has been a rapid rise in air pollution sources. Vehicular emission and factories gases are responsible for higher level of air pollutants and other organic and inorganic pollutants and their adverse effects on human and environmental health.

The AQI is rating scale for reporting the ambient air pollution recorded at monitoring sites on a particular time scale.

### LITERATURE REVIEW

RAJBALA SONI, RAJESH DHANKAR, VIKRAM MOR(2013) Approximately about 2million death are causing by pollution to calculate the air quality index as per the following equation it is  $AQI = 1/3 [SPM/SSPM + SO_2/SSO_2 + NO_x/SO_x] \times 100$ . More will be the value of AQI more hazardous will be the quality. So that the more deaths are occurred. The cardiovascular problem is high when the air quality is high.

MOHAMMED Y, CALEB JJ (2014) Due to the industries the air quality exceed the industrialization has associated with environment and the PM<sub>2.5</sub> and PM<sub>10</sub> are high and release from industries only. While releasing of gas from the industries they take preventive measures and the environment be not exceeded. By the industries the gases are released high. Here he taken the PM<sub>2.5</sub> and PM<sub>10</sub> only. By that gas only many deaths are occurred.

JAY S. PATEL HIRVA, U. SALVI AND NEHA R. PATEL (2015) He explains about the urban air pollution in urban area the air is polluted easily and the rapid increasing of pollution in the urban area. He studied on the SO<sub>2</sub> and NO<sub>2</sub> in the locations of Dwarka and vihar and in some other areas. He explained only on the urban areas. The taken areas are high urban areas. He taken values in the very high in winter season and in monsoon season it is low and in winter the AQI is low. The AQI is high in all the months and exceeds the permissible limits for all the months in taken locations.

D. KUMAR, A. DASH (2018) There are different methods to calculate the air quality. In the year of 2014 the central pollution control board has given the mathematical formula. By that formula the particulate matter like PM<sub>2.5</sub>, PM<sub>10</sub>, NO<sub>2</sub> and SO<sub>2</sub> are calculated. PM<sub>2.5</sub> and PM<sub>10</sub> are the having the high in the urban areas. They given the variation based on the season by the season variation only the quality of air is based. While calculating the air quality we have know about about the index where the air is good or not.

### EXPERIMENTAL INVESTIGATION

In general investigation, air quality assessment studies were carried out by monitoring the one area that is IDA Pashamylaram area. The representative region data were

collected by monitoring through the devices over a period of three months. Thus, collected data were used to check the parameters of PM<sub>2.5</sub>, PM<sub>10</sub>, NO<sub>2</sub>, NH<sub>3</sub>, SO<sub>2</sub>, CO and OZONE. The results obtained from the conducted experiments were verified with the permissible standard limits are drawn to observe the variation of parameters in one region.

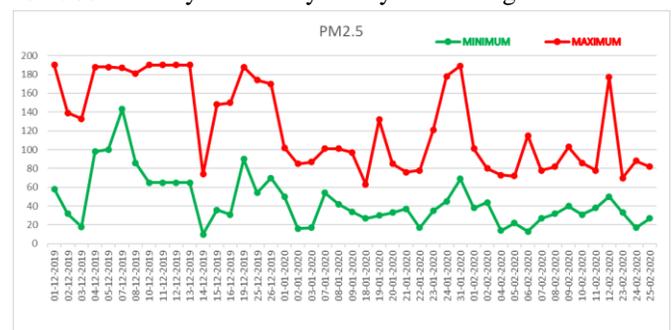
The quality of air is monitoring by the CPCB .The values are collected and the tables are done by using of that monitoring values, after that the graph is plotted and the plotted graph shows that the where the limiting values are exceeding or not. First take the tables by that only we plot the graph's and we know the air quality of that taken area.

The details of the instruments used for IAQ monitoring has been given. The instruments were installed in the areas near IDA pashamylaram industrial area were observed daily, by monitoring device which is fixed at highly polluted area.

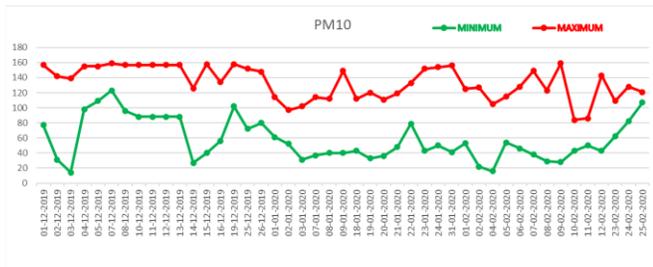
### TEST RESULTS, DISCUSSION AND FIGURES

The above graphs are showing that the IDA Pashamylaram observed by three months i.e., December, January And February values the following gases are PM<sub>2.5</sub>, PM<sub>10</sub>, NO<sub>2</sub>, NH<sub>3</sub>, CO AND OZONE.

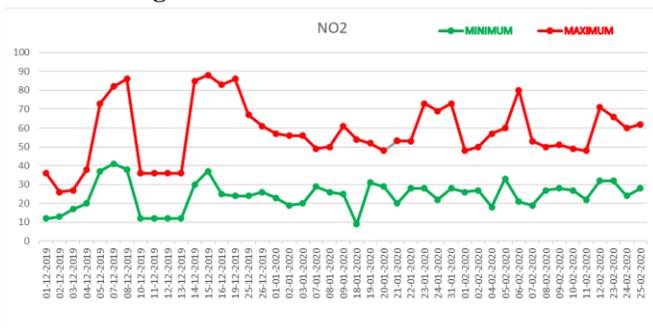
The units of these gases are measured by µg/m<sup>3</sup>. If the values are 0-50 it is good and there is no problem to health, 51-100 it is moderate and it may cause unusually sensitive, 101-150 it is un healthy and sensitive groups and it cause heart and lung disesase, 151-200 it is unhealthy and it causes sensitive groups should avoid long or heavy exertion outdoors, and 201-300 it is very un-healthy it may cause danger to life.



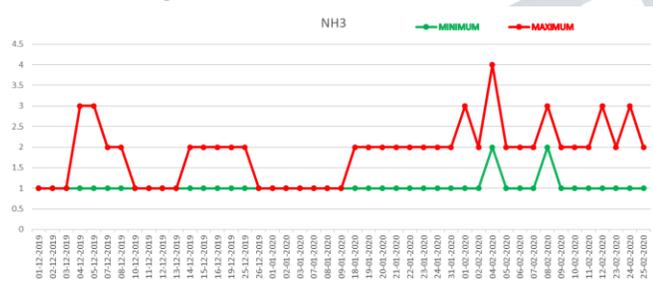
**Fig1. PM2.5 values of three months**



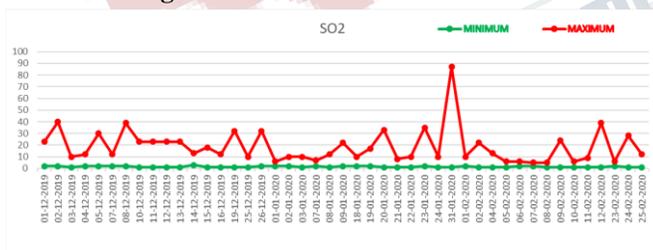
**Fig 2. PM10 values of three months**



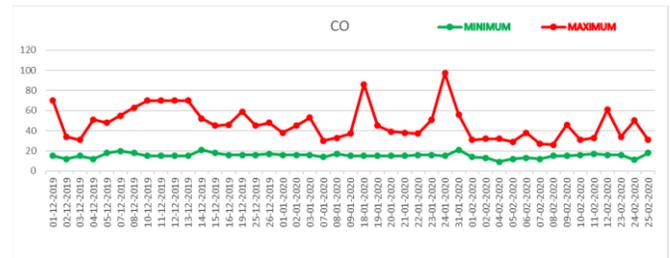
**Fig 3. NO2 values of three months**



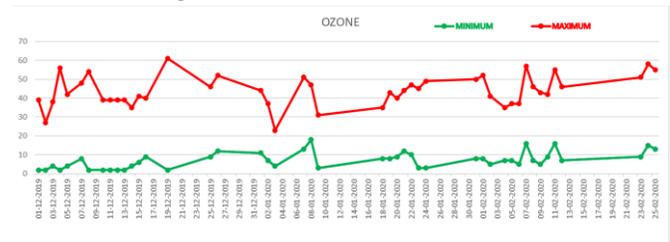
**Fig 4. NH3 values of three months**



**Fig 5. SO2 values of three months**



**Fig 6. CO values of three months**



**Fig 7. OZONE values of three months**

### CONCLUSION

The brief review of the air quality shows that the seasonal variation in the taken parameters I observed that the IDA Pashamylaram is having high polluted which means it is a polluted area and the permissible limit is high and the limit extends the CPCB value. I found high polluted in the month of December. I analyze the three months values of the area and I calculate the air quality index table by the using of CPCB and we identify the good and bad limits of that area. The minimum and maximum values of taken area are PM2.5 the least value is  $10 \mu\text{g}/\text{m}^3$  it is said to be as good and the highest value is  $190 \mu\text{g}/\text{m}^3$  it is moderate. PM10 the least value is  $14 \mu\text{g}/\text{m}^3$  it is good and the highest value is  $159 \mu\text{g}/\text{m}^3$  it is moderate. NO2 the least value is  $9 \mu\text{g}/\text{m}^3$  it is good and the highest value is  $86 \mu\text{g}/\text{m}^3$  it is satisfactory. NH3 the least value is  $1 \mu\text{g}/\text{m}^3$  it is good and the highest value is  $4 \mu\text{g}/\text{m}^3$  it is also good. SO2 the least value is  $1 \mu\text{g}/\text{m}^3$  it is said to be as good and the highest value is 87 it is satisfactory. CO the least value is  $9 \mu\text{g}/\text{m}^3$  it is good and the highest value is  $97 \mu\text{g}/\text{m}^3$  it is satisfactory. OZONE the least value is  $2 \mu\text{g}/\text{m}^3$  it is good and the highest value is  $59 \mu\text{g}/\text{m}^3$  it is satisfactory. These limits are taken by the help of CPCB.

### REFERENCES

[1] Mandal, Tapas Kumar & Gorai, Amit. (2014). Hassan Sm, Abdullahi Me Air Quality Indices: A Literature Review. 56. 357-362.

**International Journal of Engineering Research in Mechanical and Civil Engineering  
(IJERMCE)**

**Vol 5, Issue 6, June 2020**

---

[2] Being G. Ghude S. D., Deshpande A., Joanna Kalantz And Marti Nadal says about the standards values of the Air Quality Index in the metology form in the pune Meteorology-Pune; ISSN 0252-1075.

[3] Green, M. 1966. An air pollution index based on Sulphur dioxide and smoke shade. J. Air Pollution Control Assoc.11 (12): 703–706.

[4] Malaysia. 2013. A guide to air pollutant index in Malaysia. Department of Environment, Kuala Lumpur, Malaysia.

[5] Ontario. 2013. A review of the Ontario air quality index and air quality health index system. ISBN 978-1- 4606-0936- Air Resource Branch, Ontario Ministry of the Environment, Toronto, Ont., Canada.

