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Assessment of Air Quality Around Heavy Traffic Zone in Hyderabad

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Abstract: *Recently the intensity and magnitude of air pollutant concentration has grown up rapidly in the troposphere. The air pollution is primarily associated with automobiles and industrial sources Hyderabad, capital of Telangana, is a center of southern part of India for both industrial and commercial activity. It is one of the most populous urban areas with approximately 6.8 million inhabitants and over 73,000 small, medium and major industrial establishments sharing the greater city. Air pollution in India is monitored by the Central Pollution Control Board (CPCB) together with the State Pollution Control Boards (SPCBs) and the National Environmental Engineering Research Institute (NEERI) in Nagpur. The National Air Quality Monitoring Programme (NAMP) was started in 1984 with 7 sensor stations, 248 towns and cities have the air quality network of 591 Air Quality Monitoring Stations upto 2015, it is reported that in India 2022 added 180 manual air quality monitoring stations, increasing their number to 883 to achieve the target of 1,500 by 2024. For our study due to practical difficulties to collect, analysis the air quality, pollutants data has been collected from CPCB .The dataset contains City, Date, PM2.5, PM10, NO, NO2, NOx, NH3, CO, SO2, O3, Benzene, Toulene, Xylene, Air Quality Index (AQI). Hyderabad was divided into 6 zones, air quality monitoring sensors is located at 14 places in and around six zones. For our study we selected 5 stations based heavy traffic area to analyse the maximum concentration of pollutants such as $PM_{2.5}$, PM_{10}, NO_2, NO_3, SO_2, CO, for the period of three months (Dec 2022,Jan, Feb 2023).It was observed at site 1 to site 3 $PM_{2.5}$,range 183.7 – 163.26µg/m3 is very poor as per AQI, PM_{10} range 151.11 to 137.76 µg/m3 is moderately polluted as per AQI, NO_2 range 61.03 to 76.4 µg/m3 is satisfied as per AQI, NO_3 range 1.196 to 7.96 is good, SO_2 is 6.34 to 55.83 µg/m3 is satisfied ,CO 70.35 to 71.97 is severe as per AQI, continuous air quality monitoring is necessary to protect environment and human health.*

Keywords: Air Quality

I. INTRODUCTION

Hyderabad has also generated its own evidences on this insidious link especially in high traffic areas of the city. Very high respiratory symptoms have been noted in the locations close to traffic areas. This study throws a light on air pollutant level around 3 heavy traffic zones in Hyderabad because it is reported that in Hyderabad 1,700 to 3,000 people per year die prematurely as a result of inhaling PM". These figures reflect only the effects of acute exposure to air pollution. If the long-term effects of chronic exposure are taken into account, 10,000–15,000 people a year could die. Levels of ambient air pollution in many of the world's largest cities are alarming. According to the World Health Organization (WHO), 90% of the population living in cities in 2014 was exposed to concentrations of _ne particulate matter (PM2:5) exceeding WHO air quality guide- lines.1 Most Indian cities have noxious urban air quality for much of the year

II. OBJECTIVE OF THE STUDY

- To identify the source of heavy traffic zones in Hyderabad
- To collect datas about sensor station around 6 zones

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- For the present study we have select 5 sensor stations based on heavy traffic flow
- To collect air pollutant concentration level from CPCB
- To Assess the air pollutant variations level of daily ,weekly and monthly from Dec 2022 to Feb 2023 around the 5 sensor station
- Compare the air quality with NAAQS [National Ambient Air Quality standard]
- Impact assessment of air on environment and human around study area
- To suggest sustainable measures to reduce the impact of air pollution on environment

III. METHODOLOGY

The Flow chart for the Study of Air Pollution is adopted in the Fig 1.0:

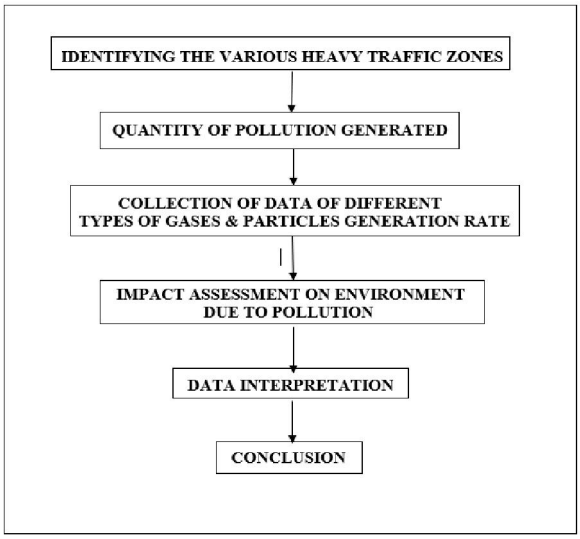

Fig 1: Flow chart of methodology

3.1 Description of study area

Hyderabad City, Telangana State, South Central India. It is the largest and most populous city in Telangana and the most important urban centre for all of South-Central India. Hyderabad was the capital of Andhra Pradesh from 1956 to 2014, but with the establishment of Telangana in Andhra Pradesh in 2014, Hyderabad became the capital of both states.Hyderabadis located on the Musi River in the heart of the Telangana Plateau, the major highland region of the Deccan (Indian peninsula). The urban area is about 500 meters above sea level and is relatively flat compared to the gentle undulations. The climate is mild to hot monsoon (that is, characterized by wet and dry seasons) with moderate annual rainfall. Most of the rain falls during the rainy monsoon season from June to October. Hyderabad has developed into a commercial hub and an international information technology (IT) hub. Pharmaceuticals, tobacco, textiles, etc. are manufactured here. Service activities, especially those related to IT, have expanded dramatically and now constitute a large part of the urban economy.

Hyderabad City is divided into 6 zones. Charminar, L.B. Nagar, Khairtabad, Secunderabad, Serilingampally, Kukatpally, Each zone is further divided into a total of 30 circles. In addition, the circle will be divided into 150 stations . In 2020, each district will have 40,000-50,000 people.

3.2 Description of the sampling stations:

Sampling stations are located around six zones in Hyderabad there are 14 sampling stations are listed below in table no.1 and the location of the sampling station are shown in Fig no.2 &3 .

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Table 2: Zones and location of sensor station

S.no	Name of the Zones	Sensor station No	Location of sensor station
1.	Serilingampally Zone	1	Bollaram Industrial Area
		2	Central University
		4	ICRISAT Patancheruvu
		5	IDA Pashamylaram
		6	IITH Kandi
		11	Ramachandrapuram
2.	Kukatpally Zone	8	Kompally Municipal Office
3.	Khairatabad Zone	7	Kokapet
		12	Sanathnagar
		13	Somajiguda
4.	Secundrabad Zone	9	Nacharam_ TSIICIALA
5.	Charminar Zone	10	New Malakpet
		14	Zoo Park
6.	Lb Nagar Zone	3	ECIL Kapra

3.5 Air Quality Monitoring Sensor:

LAMINAR AQM21 is a smart air quality monitoring system, ideal for real time monitoring of criteria pollutants, particulate matter, noise level, weather parameters and other gaseous contaminants. AQM21 is equipped to monitor air pollution data for $PM_{2.5}$, PM_{10}, NO_2, NO_3, SO_2, CO,VOCs and environmental data for temperature, humidity. pressure, wind speed, wind direction along with the noise, UV, Light intensity and more

Table 3: Zones and location of sensor study area

S.NO	Zones	Sensor stations	Latitude	Longitude
1	Charminar	Zoo park	17.3616º N	78.4747º E`
2	Khiratabad	Somajiguda	17.416º N	78.4652º E
3	Serilingampally	Patancheruvu	17.4837ºN	78.3158º E

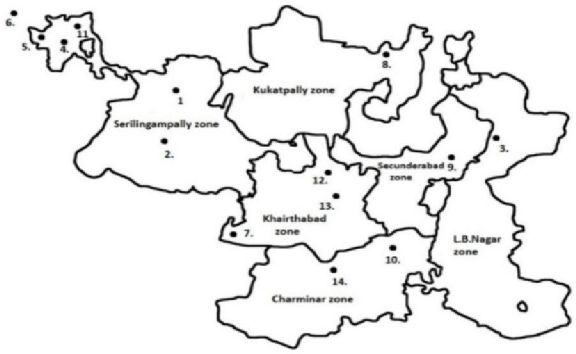

Fig 2 Sensor station with there locations.

3.6 Collection of Air Pollutant

Maximum pollutant level of following parameters $PM_{2.5}$, PM_{10}, NO_3, NO_2, CO, SO_2at three sites from dec to feb daily variations (morning to evening) observed and presented in Table 4 to 12.

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Table : Maximum pollutant level at Zoo Park during Dec .

Morning							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1^{ST}	183.5	156.5	54	1	4.75	79.25
2	2^{ND}	187.14	135.14	59.28	1	4.85	70.7
3	3^{RD}	175.28	89.85	41	0.14	4.5	63.57
4	4^{TH}	185.57	157.85	61	1	4.8	71.85
5	5^{TH}	180.2	156.5	50.1	1	5.8	66.6
Afternoon							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1^{ST}	181.75	156.5	54	1	4.75	79.25
2	2^{ND}	186.85	112.57	60.59	1	4.7	71.14
3	3^{RD}	175.28	112.42	41.42	0.14	4.71	64.71
4	4^{TH}	186	157.8	61.4	1	4.8	71.85
5	5^{TH}	180.3	154.5	49.8	0.6	5.6	66.6
Evening							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1^{ST}	184.25	156.7	54.7	1	4.25	84.25
2	2^{ND}	188.18	90.14	62.42	1	5.14	72.85
3	3^{RD}	177.85	112.28	42.71	0.28	4.85	66.79
4	4^{TH}	86.14	157.28	63.2	1	5	72.5
5	5^{TH}	174.2	156.6	49.8	1	5.2	70.8

Table 5: Maximum pollutant level at zoo park during Jan .

Morning							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1^{ST}	184.7	156.8	54.1	1.2	4.1	67.5
2	2^{ND}	186.5	157	64.8	1.2	5.5	74.6
3	3^{RD}	183.5	156.42	70.1	1.3	7.5	64
4	4^{TH}	179.4	157.5	56.2	1.5	8.8	55.14
5	5^{TH}	186	156	56	1	7	65.5
Afternoon							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1^{ST}	184.7	156.8	54.1	1.2	4.1	62.1
2	2^{ND}	187	157	64.8	1	5.5	70.8
3	3^{RD}	183.5	135.8	75	1.6	7.3	62.71
4	4^{TH}	177.8	157.5	56.2	1.5	8.8	55.14
5	5^{TH}	186	156	56	1	7	65.5
Evening							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1^{ST}	186.5	157	55.6	1.25	4.5	68.7
2	2^{ND}	186.2	157	65	1	5.5	73
3	3^{RD}	183.1	156.4	70.2	1.4	7.1	62.1
4	4^{TH}	180.2	157.5	66.1	1.5	8.8	52.2
5	5^{TH}	183	154	59.5	1	7.5	66.5

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Table 6: Maximum pollutant level at Zoo Park during Feb.

Morning							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	186.2	158	61.1	1	8	83
2	2ND	181.6	156	60	1	8.14	79
3	3RD	181.8	157.1	73.1	1.5	8	78.5
4	4TH	187	158	64	3	6.5	72
5	5TH	188	158	64.1	1	7	53.1
Afternoon							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	186.1	158	61.8	1	8	83
2	2ND	181.7	156	60.1	1	8.4	77.4
3	3RD	180.1	157.1	72	2	7.2	73.1
4	4TH	187.1	158.1	64.1	2	6.1	71
5	5TH	188	157.1	64.1	1.5	7	53.9
Evening							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	185.4	154.9	64.9	1	8	83
2	2ND	182	156	61.5	1	8.57	77.4
3	3RD	160.5	156.1	72.1	1	7.14	78.9
4	4TH	186.9	158.15	63.7	2.5	6.2	71.9
5	5TH	188	156.2	64	1.5	6.1	54

Table 8: Maximum pollutant level at Somajiguda during Dec .

Morning							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	149	99.5	7	3	8.1	34
2	2ND	113.6	72	6	3	9	33
3	3RD	109	72	5	2.1	11	34
4	4TH	187	158	7.5	3	12	38
5	5TH	183	156	8	3	14	50
Afternoon							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	149	99.5	6	3	9	33.1
2	2ND	120.1	75.1	7	2.5	8.5	32
3	3RD	108	72.4	3	2.18	11.9	32
4	4TH	184	159	7.5	3.2	12.14	32.1
5	5TH	179	143	5	3	14.1	51
Evening							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	149	99.5	7	3	8.5	33.5
2	2ND	125.2	72.1	7.1	2	8.2	31
3	3RD	109	72	3.4	2.7	10	32.5
4	4TH	181.4	159.1	7.8	3.1	12.14	38.1
5	5TH	183	116	8	3	14.2	50

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Table 9: Maximum pollutant level at Somajiguda during Jan.

Morning							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	208	115	9	4	14	56
2	2ND	131	81	9	3	12	67
3	3RD	126	78.1	9	3	13	33
4	4TH	155	103	9	3	13	108
5	5TH	143.1	80	8	3	13.1	48
Afternoon							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	208	96	8	3	15	56.1
2	2ND	130	81.4	6	3	12	64.1
3	3RD	147	78.5	7	3	10.9	38.1
4	4TH	155	103	9	3	13	108
5	5TH	143	81.5	8.5	2.5	13.15	48.1
Evening							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	207	87.1	7	4	14	56.7
2	2ND	112	80.5	7	3	14	68
3	3RD	126	78	6	3	13	33
4	4TH	158	102	9	3	13	108
5	5TH	144	82	8.51	3	13.2	48

Table 10: Maximum pollutant level at Somajiguda during Feb .

Morning							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	191	124	9	3	14	85
2	2ND	138	95	7.5	3	14	68.1
3	3RD	131	73	12.1	3	12.1	56
4	4TH	178	90	5	2	13	58
5	5TH	113	80.1	13	3	13	112
Afternoon							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	191	122	8	3	14.1	85.1
2	2ND	135	88	7.18	3	13	68.5
3	3RD	129	79	12.14	3	13.9	58
4	4TH	178.1	90.1	3	3	14	58.1
5	5TH	113.21	80.21	12	3	13.1	112.1
Evening							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	190.8	122.18	9	3	14	85
2	2ND	138	95	7.12	3	13	69
3	3RD	129	79	12.14	3	12.9	58
4	4TH	178.5	90	9	3	14	58.9
5	5TH	113	80.15	13	3	13	42

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Table 11: Maximum pollutant level at Patancheruvu during Dec

Morning							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	183.5	156	91	6.75	59.75	78
2	2ND	183	154.7	72.4	13.57	82.4	79
3	3RD	56	54	47.6	6.3	18	61.6
4	4TH	186.3	87	81.6	31.66	56.33	77.6
5	5TH	176	156	117.5	5	54.5	72
Afternoon							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	183.5	156	91	6.75	59.75	78
2	2ND	183.42	154.7	77.4	13.57	181.57	79.8
3	3RD	55.3	54	47.6	6.3	18	61.6
4	4TH	186.3	97	71.6	30.66	42.66	79.66
5	5TH	176	156	117.5	5	54.5	72
Evening							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	183.5	156	91	6.75	59.75	78
2	2ND	183.5	154.7	88	13.57	83	57.57
3	3RD	55.3	55.6	47.6	6	18	62.6
4	4TH	186.3	97	72	30.6	42.66	79.66
5	5TH	176	156	117.5	5	54.5	72

Table 12: Maximum pollutant level at Patancheru during Jan .

Morning							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	160.5	136	66.7	4.57	31.8	93.4
2	2ND	184.3	133.8	96.14	4.71	55.1	63.2
3	3RD	125.2	119.4	37.7	4.4	21.2	52.4
4	4TH	150	137	53.2	6.4	22.7	57
5	5TH	164	148.3	47	4	23.3	59.6
Afternoon							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	162	136.8	66.7	4.57	32.71	76
2	2ND	184.3	133.8	96.14	4.7	47.2	62.2
3	3RD	125.2	119.4	37.7	5.85	20.8	53
4	4TH	149.8	136.7	53.2	4.71	22.8	57.4
5	5TH	166.6	148	47	3.6	24	61.6
Evening							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	162	135.1	65	4.8	32.71	76
2	2ND	184.3	134.14	86.8	4.5	46	61.4
3	3RD	125.8	125.4	44.8	5.85	21.7	53
4	4TH	149.8	136.7	54.8	4.4	21.57	57.4
5	5TH	166.6	148	47	3.6	24	61.6

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Table 13: Maximum pollutant level at Patancheruvu during Feb.

Morning							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	182	157.8	89.8	6.2	69.6	67.2
2	2ND	180.5	154	87.1	6.5	48.5	71.4
3	3RD	181	157.8	105.6	7.4	76.5	91.4
4	4TH	178.5	155	94.3	6.3	54.8	77.4
5	5TH	154	143.5	53.5	5	29.5	76
Afternoon							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	182	157.8	89.8	6.4	70	66.4
2	2ND	180.5	154	87.1	6.5	49.2	72.8
3	3RD	181.8	156.28	105.6	7.4	109.8	77.2
4	4TH	179.2	155	94.3	6.3	62.1	71.7
5	5TH	154	143.5	53.5	6	27.2	73
Evening							
S.no	**Weeks**	**$Pm_{2.5}$**	**Pm_{10}**	**NO_2**	**NH_3**	**SO_2**	**CO**
1	1ST	181.6	157.8	89.8	6.4	78.2	66.4
2	2ND	180.5	154	85.5	6.2	50.8	72.8
3	3RD	181.8	156.28	80	7	109.8	77.2
4	4TH	179.2	155.2	94.3	6.1	61	72.28
5	5TH	154	143.5	53.5	5	27.2	73

IV. RESULTS AND DISCUSSIONS

The average concentration of 6 pollutant during three session of day from Dec to Feb of three sites is shown fig 3 to 11.

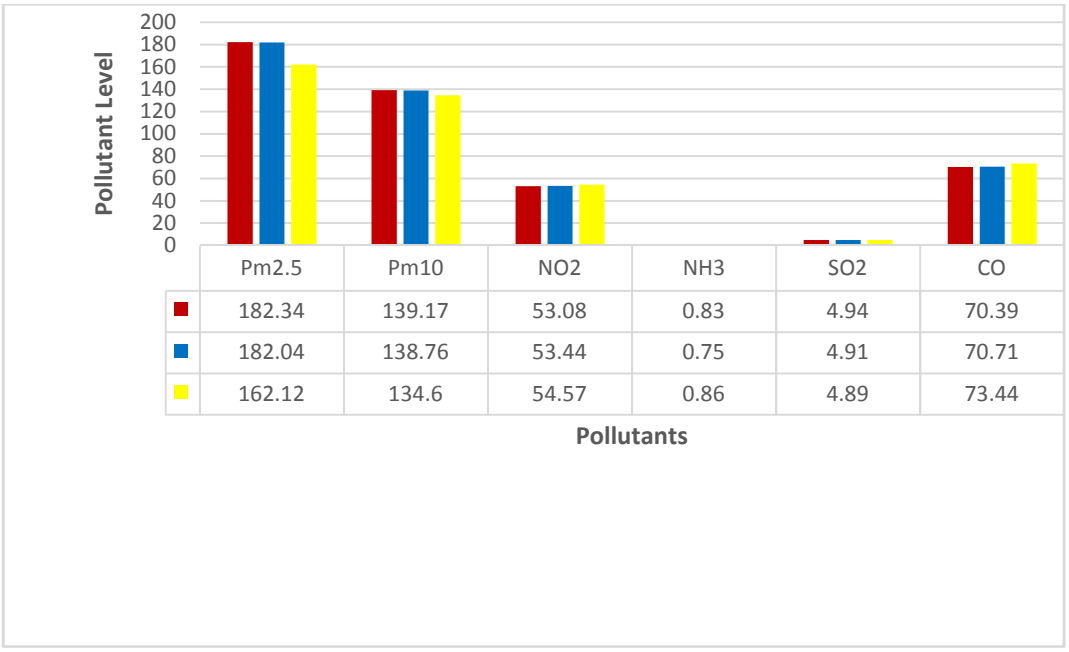

Fig 3 Pollution level during Dec at Site -1

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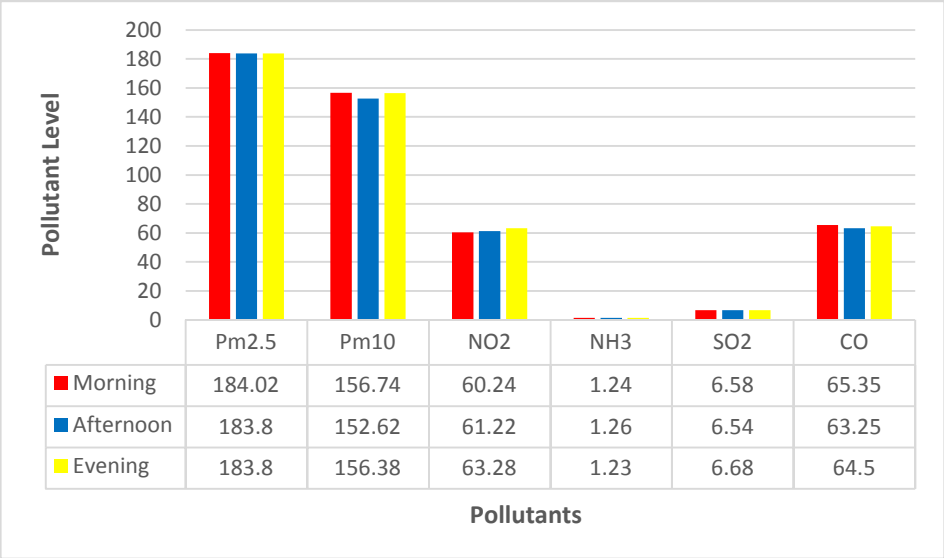
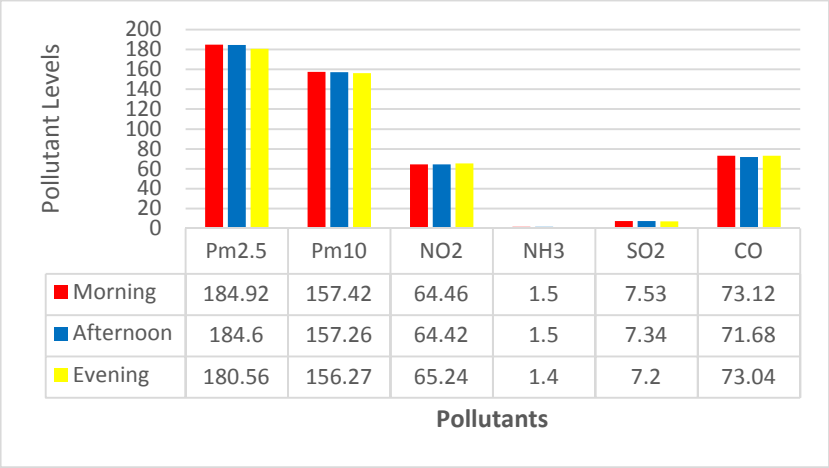


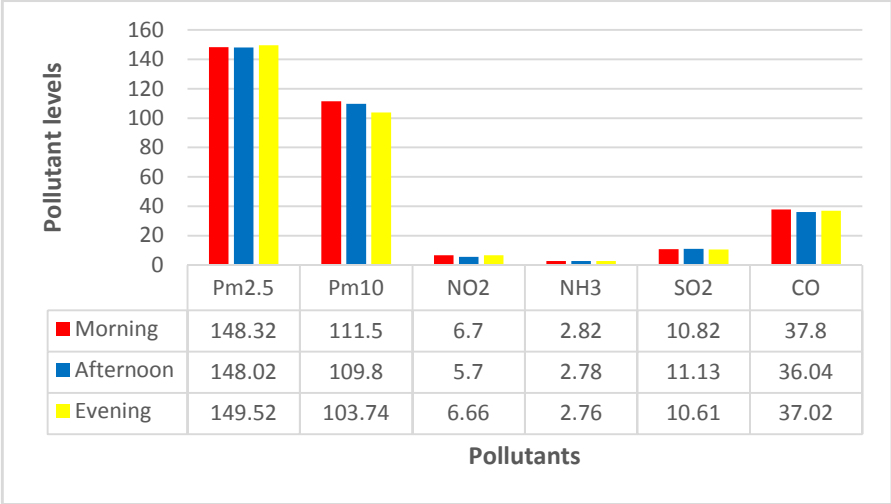
	Pm2.5	Pm10	NO2	NH3	SO2	CO
Morning	184.02	156.74	60.24	1.24	6.58	65.35
Afternoon	183.8	152.62	61.22	1.26	6.54	63.25
Evening	183.8	156.38	63.28	1.23	6.68	64.5

Fig 4 Pollution level during Jan at Site -1



	Pm2.5	Pm10	NO2	NH3	SO2	CO
Morning	184.92	157.42	64.46	1.5	7.53	73.12
Afternoon	184.6	157.26	64.42	1.5	7.34	71.68
Evening	180.56	156.27	65.24	1.4	7.2	73.04

Fig 5 Pollution level during Feb. at Site -1



	Pm2.5	Pm10	NO2	NH3	SO2	CO
Morning	148.32	111.5	6.7	2.82	10.82	37.8
Afternoon	148.02	109.8	5.7	2.78	11.13	36.04
Evening	149.52	103.74	6.66	2.76	10.61	37.02

Fig 6 Pollution level during Dec at Site -2

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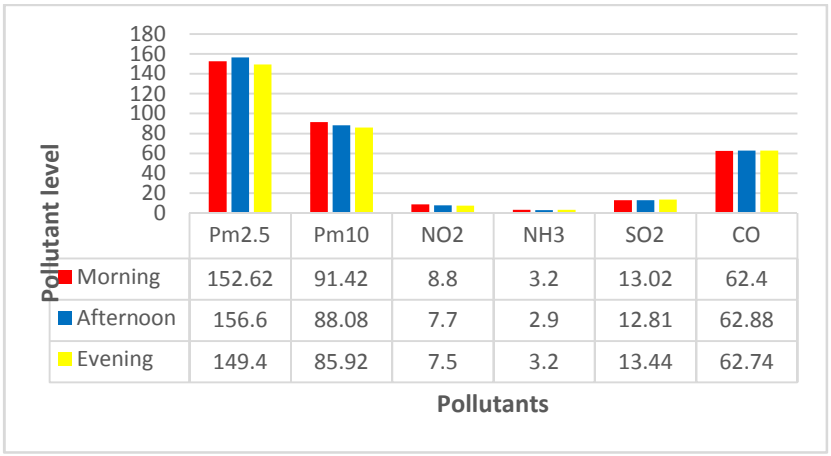
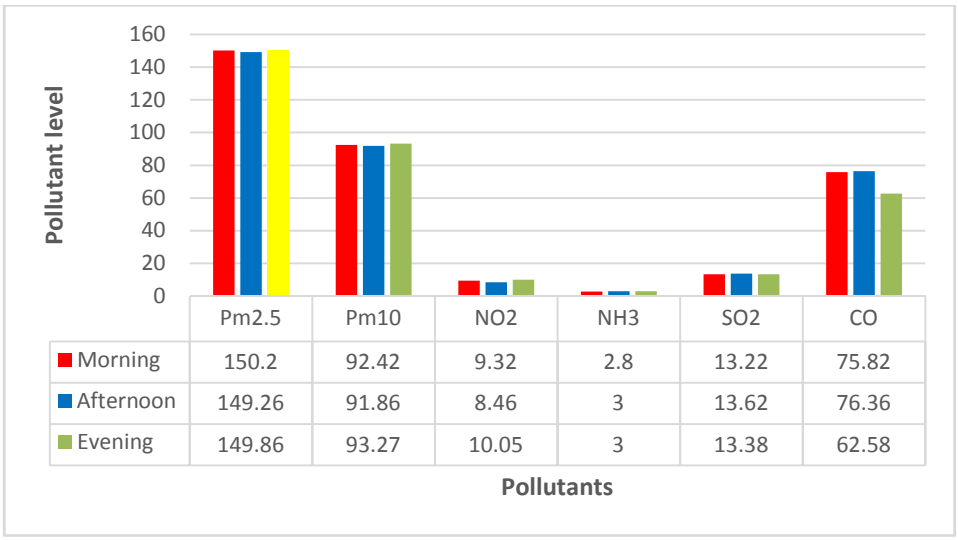


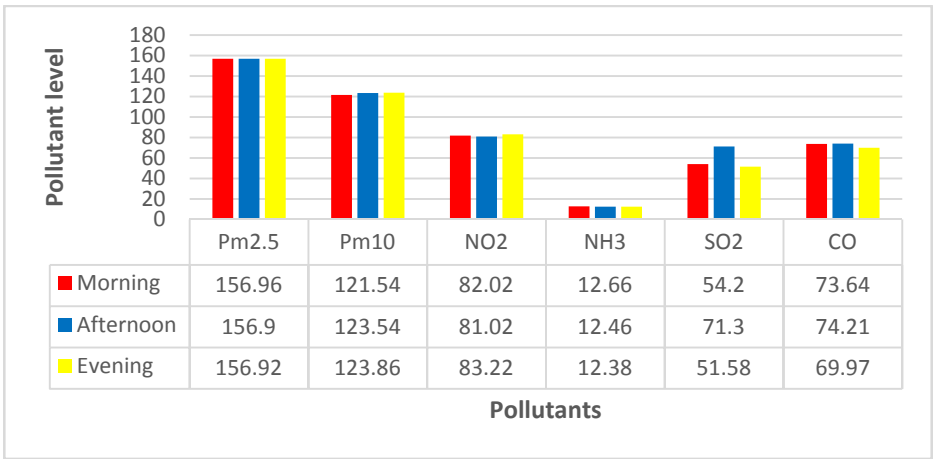
	Pm2.5	Pm10	NO2	NH3	SO2	CO
Morning	152.62	91.42	8.8	3.2	13.02	62.4
Afternoon	156.6	88.08	7.7	2.9	12.81	62.88
Evening	149.4	85.92	7.5	3.2	13.44	62.74

Fig 7 Pollution level during Jan at Site -2



	Pm2.5	Pm10	NO2	NH3	SO2	CO
Morning	150.2	92.42	9.32	2.8	13.22	75.82
Afternoon	149.26	91.86	8.46	3	13.62	76.36
Evening	149.86	93.27	10.05	3	13.38	62.58

Fig 8 Pollution level during Feb. at Site -2



	Pm2.5	Pm10	NO2	NH3	SO2	CO
Morning	156.96	121.54	82.02	12.66	54.2	73.64
Afternoon	156.9	123.54	81.02	12.46	71.3	74.21
Evening	156.92	123.86	83.22	12.38	51.58	69.97

Fig 9 Pollution level during Dec at Site -3

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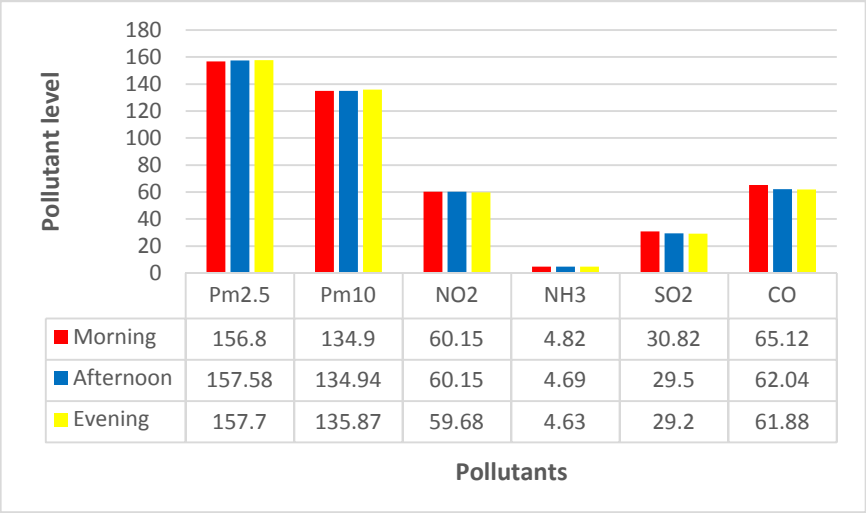

Fig 10 Pollution level during Jan at Site -3

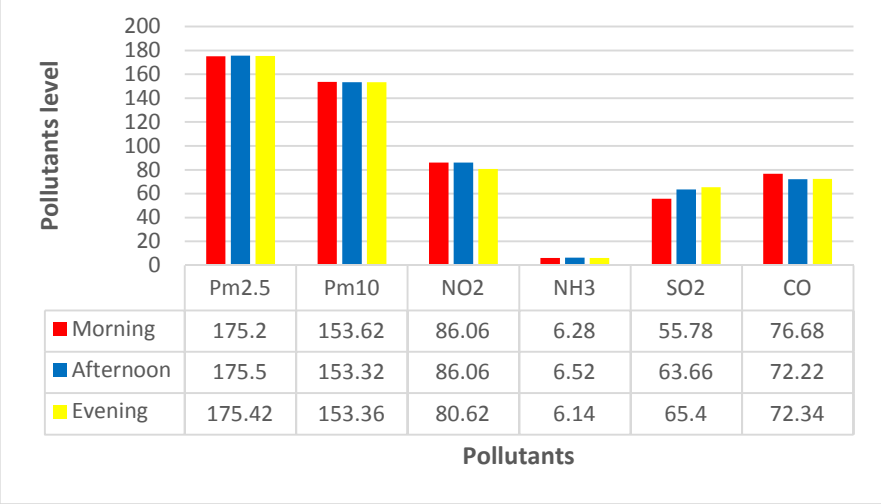

Fig 11 Pollution level during Feb. at Site -3

From our Study it was observed that most of the pollutant exceeds the AQI. At site 1 average concentration Pollutant level in zoo park area $PM_{2.5}$ is 183.76 µg/m3 is very poor so the human faces respiratory illness on prolonged exposure, PM_{10} is 151.1 µg/m3 1 is moderated polluted the human faces problems like breathing discomfort ,lungs asthma and hard diseases. NO_2 value is 61.03 µg/m3 range is satisfactory the human faces minor breathing discomfort to sensitive people, NH_3 is 1.196 µg/m3 , So_2 is 6.34 µg/m3 ,is good for this human faces minimum impact. Respectively CO is 70.35 µg/m3 shows severe this affects healthy people and seriously impacts those with existing diseases as per AQI concentration. In somajiguda area $PM_{2.5}$ is 151.6 is very poor for that human faces respiratory illness on prolonged exposure, PM_{10} is 98.3is satisfactory human faces minor breathing discomfort to sensitive people, NO_2 is 8.46 µg/m3. NH_3 is 3 µg/m3 , similarly So_2 is 12.79 µg/m3 range good for this human faces minimum impact. CO value is 58.89 µg/m3 range severe this affects healthy people and seriously impacts those with existing diseases as per AQI concentration In patancheruvu area $PM_{2.5}$ is 163.26 µg/m3 is very poor for that human faces respiratory illness on prolonged exposure, PM_{10} is 137.76 µg/m3 is moderated polluted for this human faces problems like breathing discomfort to the people with the lungs asthma and heart diseases, NO_2 is 76.4 µg/m3 is satisfactory human faces minor breathing discomfort to sensitive people. NH_3 is 7.96 µg/m3 range good for this human faces minimum impact. So_2 is 55.83 µg/m3 is satisfactory causes minor breathing discomfort to sensitive people. CO is 71.97 µg/m3 is severe affects healthy people and seriously impacts those with existing diseases as per AQI concentration range.

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V. CONCLUSION

Air quality level was observed and compared with AQI, the results obtained and their impact on human is presented from selected site 1 to site 3 respectively $PM_{2.5}$,range 183.7 – 163.26µg/m3 is very poor causes respiratory illness, PM_{10} range 151.11 to 137.76 µg/m3 is moderately polluted causes breathing discomfort (Asthma, lungs), NO_2 range 61.03 to 76.4 µg/m3 is satisfied causes minor breathing discomfort to sensitive people , NO_3 range 1.196 to 7.96 µg/m3 is good causes minor effect, SO_2 is 6.34 to 55.83 µg/m3 is satisfied causes minor breathing discomfort to sensitive people ,CO 70.35 to 71.97 µg/m3 is severe effects on healthy people and serious impact for those with existing diseases, so continuous air quality monitoring is necessary to protect environment and human health.

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