

PRESENT STUDIES ON AMBIENT AIR QUALITY MONITORING FROM UBDT COLLEGE OF ENGINEERING TO DODDABUDHIHAL DURING SUMMER SEASON IN THE MONTH OF MARCH

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Abstract – The main aim of this project is to examine the ambient air quality parameters such as Suspended Particulate Matter (SPM), Sulphur Dioxide (SO₂) and Nitrogen Dioxide (NO₂) in Davanagere city from UBDT College of Engineering to Doddabudhihal and also to determine the Air Quality Index (AQI) in the Commercial, Industrial, Residential and Sensitive areas of the 7 selected locations of the Davanagere city from UBDT College of Engineering to Doddabudhihal during summer season in the month of March. It has been observed that concentration of Suspended Particulate Matter is more in the Railway Station and it exceeds the standard limit of National Ambient Air Quality Standards (NAAQS) and remaining stations are within the standard limit. The concentration of Sulphur Dioxide and Nitrogen Dioxide is within the National Ambient Air Quality Standards (NAAQS) in all the stations. Air Quality Index (AQI) value of the Railway Station is severely polluted and it is very dangerous for the public health and causes various problems.

Keywords: - Air Quality, Suspended Particulate Matter, SO₂, NO₂, NAAQS, AQI.

1. INTRODUCTION

Air pollution is a significant issue that influence people all around the world. Air pollution is explain as the existence of affluences in the environs that are detrimental to social being and other incarnate creatures, health, or destruction. There are a variety of air contaminants, including gases and biological substances. Artificial and natural causes are the prime sources of air contamination. Without air no living beings can existed on this earth. A man can existed without a food in 3 days. But he cannot exist without air. Generally a man needs 16.5kg of air per day. Air pollutant will be entered in to the environment from various types of sources such as natural and human sources and affect the environment. Burning of fuel, running of motor, and industrial activity these all process releases the pollutants into the atmosphere. [2].

1.1 Objectives of study

- Suspended Particulate Matter Monitoring in 7 selected locations ranging from UBDT College of Engineering to Doddabudhihal during the warm months of March.
- Monitoring of gaseous pollutants such as sulphur dioxide (SO₂) and nitrogen dioxide (NO₂) at seven locations ranging from UBDT College of Engineering to Doddabudhihal during the warm month of March.
- Comparison of Suspended Particulate Matters and Gaseous Pollutants with respect to National Ambient Air Quality Standards.

2.0 MATERIALS AND METHODOLOGY

The device used to measure air quality characteristics is the High Volume Air Sampler (HSAV). TSP samples are collected using a device known as a high volume air sampler. As air passes through the device, the sampling filter captures Total Suspended particles, as illustrated in the picture. The filter is re-weighted after sampling, and the variance in filter weight equals the collected particulate matter quantity. TSP concentration is calculated by distributing the quantity by the capacity of air tested. The suspended particulates are collected on big filter paper by the high volume air sampler. Because the sampling flow rate is high, ranging from 1.1 to 1.7m³/min, the moniker "high volume" is suitable. Large volumes of particles oscillating from 0.1 to 1 gramme are collected throughout a normal 24-hour sampler period due to the high flow rate. This is the advantage of high volume samplers over other air sampling technologies in terms of gravimetric and chemical analyses.

3. Results

Air pollution levels at every station can be graded during the warm season in the months of March depending on the values of the AQI. In March, the UBDT college's AQI result indicates that the air is minimally contaminated. In March, Vidyarthibhavan, Jayadeva circle, Honda circle, and Ramanagar had light air pollution, which is tolerable. In the months of March, the air near the railway station is quite filthy. Finally, the AQI readings indicate that Doddabudhihal has clean air in March.

Table -1: SPM, SO₂, NO₂ and Air Quality Index Concentration in the Month of March

Sl No	Locations	Suspended Particulate Matter in $\mu\text{g}/\text{m}^3$	SO ₂ in $\mu\text{g}/\text{m}^3$	NO ₂ in $\mu\text{g}/\text{m}^3$	AQI Values
1	UBDTCE	91.75	3.32	21.44	58.09
2	Vidyarthibhavan	162.19	13.17	22.33	41.82
3	Jayadeva Circle	187.59	19.41	19.28	47.38
4	Railway Station	544.14	20.22	55.19	122.11
5	Honda Circle	153.05	12.18	21.42	39.51
6	Doddabudhihal	81.89	7.14	11.46	21.40
7	Ramanagar	85.04	38.18	34.38	25.82

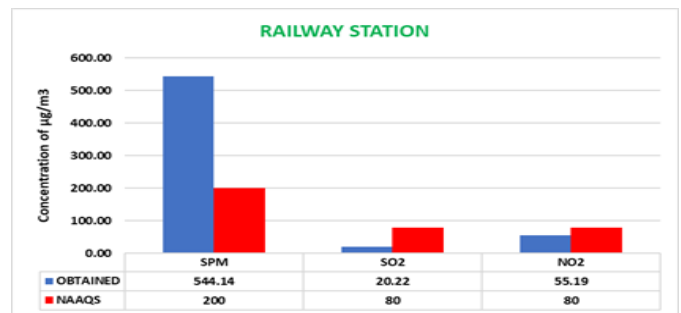


Chart -4: Variation of SPM, SO₂ and NO₂ at Railway Station

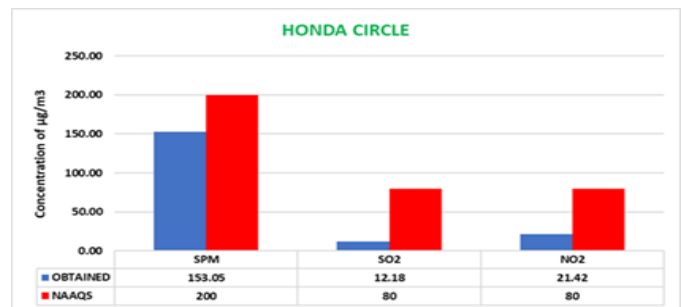


Chart -5: Variation of SPM, SO₂ and NO₂ at Honda Circle

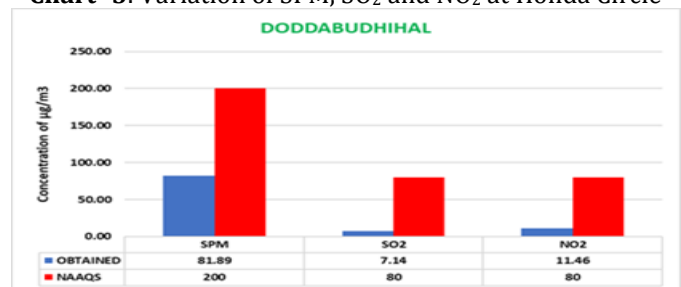


Chart -6: Variation of SPM, SO₂ and NO₂ at Doddabudhihal

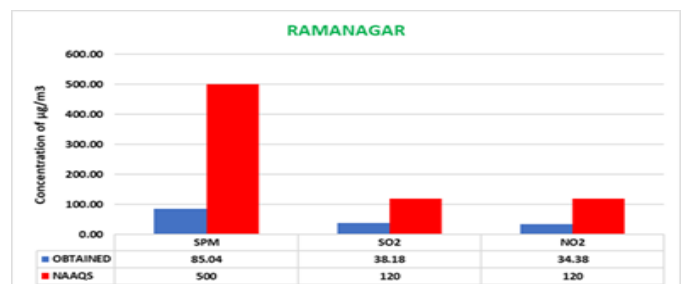


Chart -7: Variation of SPM, SO₂ and NO₂ at Ramanagar

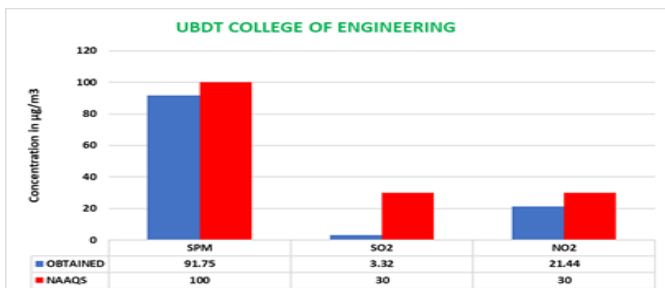


Chart -1: Variation of SPM, SO₂ and NO₂ at UBDTCE

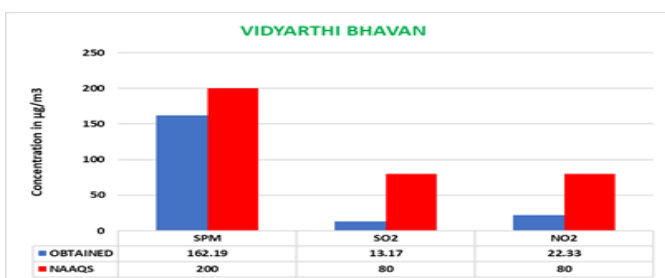


Chart -2: Variation of SPM, SO₂ and NO₂ at Vidyarthibhavan

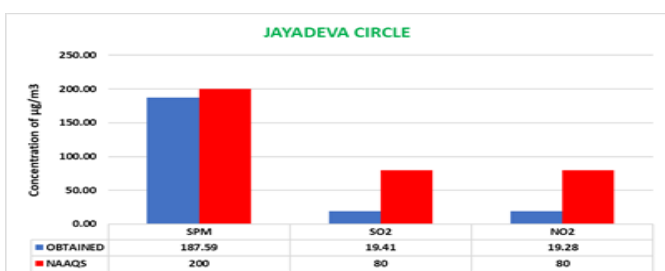


Chart -3: Variation of SPM, SO₂ and NO₂ at Jayadeva Circle

3. CONCLUSIONS

IRJET Bench scale, Based on the location, it can be presume that in the months of March, the SPM agglomeration is higher in the Railway station and exceeds the NAAQS (National Ambient Air Quality Standards) standard limit, while the remaining places are within the standard limit. In the months of March, the concentrations of SO₂ and NO₂

were within the NAAQS allowed limits in all places. The Railway station's AQI was significantly polluted, making it very unhealthy for the public and causing a variety of health concerns.

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