

## Carbon Monoxide Level in Different Points of Traffic Junctions- A Case Study

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### **Abstract**

*Quality air is most important for quality life of living beings, today social and practical activities are more in the society, due to these vibrant activities in the city areas, the pollution rate is increase in order, the life of living beings without air is highly difficult, with that the quality of air condition is showing decline in the quality, The present study , analysis of carbon monoxide was carried out with electronic devise, shows that Carbon Monoxide level is high in the selected traffic junctions in Bengaluru city, it is due to heavy traffic density in the traffic signals during peak hours in the city areas, the value of Carbon monoxide was shows that crossing the permissible values in selected study areas.*

**Key Words:** *Carbon Monoxide, Electronic devise.*

### Introduction

#### **Introduction**

The Bengaluru city is the capital city of Karnataka state, which is having the population of more than crore, The city is named silicon city due to many software companies are located in different parts of the city. The Bengaluru city is located at height of 900 meters above the sea level, The city is called now silicon city due to many more IT companies are located in different parts of the city, The city population is crossed the one crore and the vehicle population has crossed the more than 85 lakhs. The Bengaluru city is hub for getting employment to the outsiders and also is fastest growing in Asia. The mean annual rainfall is about 900 mm in June to September and October to November, with opposite wind regimes corresponding to Southwest and Northeast monsoons respectively. The average monthly relative humidity ranges from 85% between Jan to Oct to 44 % in dries March. The high wind speed averages 17 km/h throughout the westerly winds in the month of July and a lowest of 8 to 9 km/h during the months of April and October (Air quality trends-2006, cpcb). The city has got the population of the vehicles more the eighty lakhs. The different category of vehicles are plying in the city, in that the two wheelers are predominant, major in the strength, in almost all city areas having more than thirty-five percentage of vehicles. Which causing the pollution rate is high.

#### **Materials and Methods**

The present study was carried out during Feb 2019 to April 2019 with selected traffic junction points and instruments like electronic carbon monoxide measuring device for assessment of CO, Carbon mono-oxide analyzer is a handheld instrument used to collect carbon mono-Oxide samples, it is a colorless, odorless, combustible and lethal gas produced by incomplete combustion fossil fuels (coal, natural gas). Which works on laser scattering principles. Using laser scattering principle: Fig. 1 shows that Carbon monoxide measuring with electronic device.

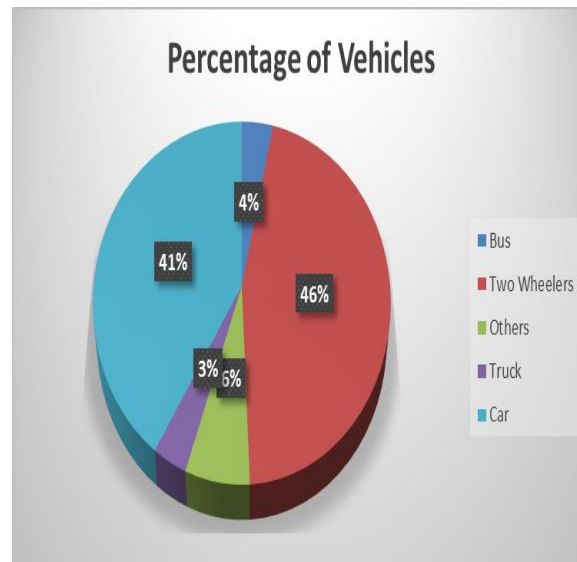


**Fig 1: Electronic Device for Carbon Monoxide Measurement**

In Bengaluru city most of the main traffic junctions are busy with heavy vehicles in peak hours and pollution level were also shows crossing the permissible limits( CO-2 mg/m<sup>3</sup>), keeping in that the important selected junction were identified for study, the selected junctions were KR Puram and Nagavara junction. KR Puram is a main junction point to connect Kolar and also continuation to the famous pilgrimage place of Thirupathi and Chennai, the National high way No7, also this junction connects the IT park of White field area which has got so many IT industries and small scale industries are located. Also many educational institutes are located in surrounding area of White field and KR Puram. Due to this effect, the population of both human and vehicles were showing is high. Nagavara junction is connecting with major outer ring road of linking between Hebbal and KR Puram area and also it connects the Thalisanandra road, so that the junction is most of the time is busy with the vehicular population

### **Result and Discussions**

The study were carried out at selected junction points of KR Puram and Nagavara, those points were shows the pollution rate of Carbon Monoxide was crossing the permissible limits, it was due to high volume movement of vehicles and other activities like generator sets nearby shops due to power failure. It will be more in the morning and then gradually decreases towards afternoon then increase towards the evening. Table 1 and 2, Shows that the average values of Carbon monoxide in week days and weekend days respectively. As observed traffic is only the major cause to this pollution level variation. When the traffic is more it make dust particles on the road to raise, with this the pollution rate will become high. The fig No 2 shows that average percentage of vehicles plying at KR Puram junction, here in peak hours the movement of vehicles were high volume due to more number of employ working points are located in surrounding area of KR Puram and also due to the main National Highway No 7 is passing through this junction.

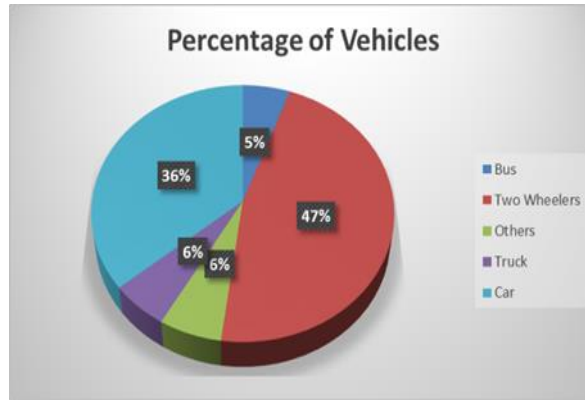


**Fig No: 2. Average Percentage of Vehicles in Week Days near KR Puram Junction**

**Table: 1 Average Values of Carbon Monoxide in KR Puram Junction in Week Days and Weekend Days**

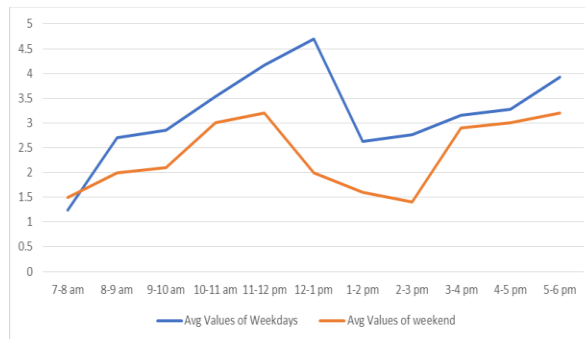
Sl No	Time in Hours	CO mg/m <sup>3</sup> Week Days	CO mg/m <sup>3</sup> Weekend Days
1	07-08 am	1.23	1.50
2	08-09 am	2.70	2.00
3	09-10am	2.86	2.10
4	10-11 am	3.54	3.00
5	11-12 pm	4.16	3.20
6	12-01pm	4.70	2.00
7	01-02 pm	2.63	1.60
8	02-03 pm	2.76	1.40
9	03-04 pm	3.16	2.90
10	04-05 pm	3.27	3.00
11	05-06 pm	3.93	3.20

The fig 2a shows that classification of vehicles in percentage wise in Nagavara junction point, here most of the time busy with traffic due well connecting to center city, in this again the two wheelers were dominating in this junction point and buses are in second place.



**Fig No: 2a. Average Percentage of Vehicles in week days near Nagavara Junction**

Fig. 3: shows that variation of carbon mono-oxide in weekday and weekend. It can be seen that the values vary in same trend in both cases but pollution levels quit high in the weekdays as compare to weekend.



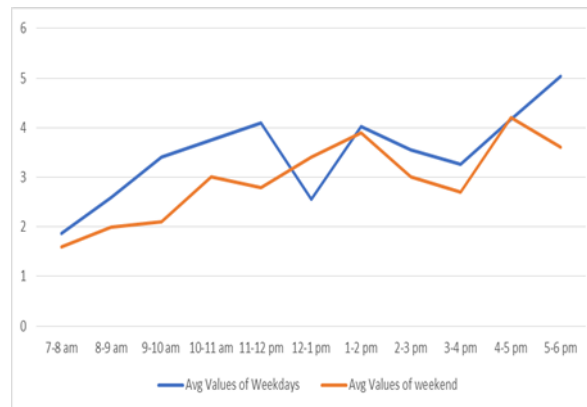
**Fig 3: Variation of Carbon Mono-Oxide in Weekday and Weekend**

The table no 2 shows that the average values of Carbon Monoxide in the junction of Nagavara, most of the time the values are varying and showing the high level than permissible value, it is due to the high density, improper function of Engine, and old vehicles are plying in the city.

**Table: 2 Average Values of Carbon Dioxide Nagavara Junction in Week Days**

Sl No	Time in Hours	CO mg/m <sup>3</sup> Week Days	CO mg/m <sup>3</sup> Weekend Days
1	07-08 am	1.86	1.60
2	08-09 am	2.60	2.00
3	09-10am	3.40	2.10
4	10-11 am	3.76	3.00
5	11-12 pm	4.10	2.80
6	12-01pm	2.56	3.40
7	01-02 pm	4.03	3.90
8	02-03 pm	3.56	3.00
9	03-04 pm	3.26	2.70
10	04-05 pm	4.16	4.20
11	05-06 pm	5.03	3.60

Fig. 4 shows that variation of carbon mono-oxide in weekday and weekend. It can be seen that the values vary in same trend in both cases but pollution levels quit high in the weekdays as compare to weekend.



**Fig 4: Variation of Carbon Mono-Oxide in Weekday and Weekend**

### Conclusions

Majorly the vehicles were play a role to increase the Carbon Dioxide. The two wheelers were predominate in this study area and also other vehicular impact make the pollution problem, the classification of vehicles like auto-rickshaws; heavy vehicles were also may cause pollution level more in that study junction points. The value of pollutants show more than the permissible values during peak hours and other period of time.

### Acknowledgement

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