

## A study on Ambient Air Quality Status of Udgir, Maharashtra India

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Available online at: [www.isca.in](http://www.isca.in), [www.isca.me](http://www.isca.me)

Received 14<sup>th</sup> November 2015, revised 11<sup>th</sup> March 2016, accepted 30<sup>th</sup> May 2016

### Abstract

Air is the one of the important factor for survival of human beings and other organisms. It is emerging public health problem in developing countries. In this investigation Udgir city has been studied for the Ambient Air Quality status. Udgir is the major taluka in the Latur district of Maharashtra India. For the study purpose two sampling stations were selected from January to December 2013. Shivaji Chowk, Captain Krishnakant Chowk and Maharashtra Udaygiri Mahavidyalaya. Four pollutants were considered for the determining the air quality they are sulfur dioxide, oxides of nitrogen, RSPM (respirable suspended particulate matter and SPM (Suspended particulate matter. From these three areas, two areas viz.. Shivaji Chowk and Captain Krishnakant Chowk the levels of pollutant like SPM and RSPM were majorly more than permissible level as compare to CPCB (Central Pollution Control Board) New Delhi. The average concentrations of air pollutants at Shivaji Chowk area and Captain Krishnakant Chowk area were higher than that of Maharashtra Udaygiri Mahavidyalaya area. The levels of SO<sub>2</sub> and NO<sub>2</sub> were below the levels of CPCB guidelines in the both areas. The areas viz. Shivaji Chowk area and Captain Krishnakant Chowk area have moderate air pollution whereas the area of Maharashtra Udaygiri Mahavidyalaya has light air pollution.

**Keywords:** Air Pollution, Air Quality Index, SPM, SO<sub>2</sub> and NO<sub>x</sub>.

### Introduction

Clean air is a basic necessity for sustenance of life. In spite of introduction of cleaner technologies in industry, energy production and transport sectors, air pollution remains a major health risk. Recent epidemiological studies have provided evidence that even low pollution levels increase mortality and morbidity. The urbanization in India is under the threat of environmental pollution; this is now leading towards the nearby rural area causing serious health problems. This development in urbanized area is becoming centre for job and certainly the increase in human settlement in the region<sup>1</sup>.

Decrease of air quality is a cause of concern sin affects the human health. The economic growth coupled with rapid urbanization, increased number of vehicles, industrial and human activities are responsible for the changes in the air quality. This has attracted attention of the Government and civil society. The air pollution costs society in terms of damage to human health, buildings, vegetation, lowered visibility and increased green house gases<sup>2</sup>. Fossil fuel combustion along with industrial belts and traffic that emits vapors and gases in the atmosphere those are directly coming in the contact of the people and affecting human and environmental health.<sup>3</sup> Increase in vehicular number particularly in rural areas of developing countries with rapid industrialization is a serious concern for air pollution<sup>4</sup>. Pollution is more due to urban activities than the rural and is a serious concern related to health in developing

countries<sup>5</sup>. Udgir is a city near Latur having three lakhs population with increasing urbanization and industrialization. Hence the study has been undertaken for the assessment of level of air pollutants like SO<sub>x</sub>, NO<sub>x</sub> SPM And RSPM in the city and to know the level of it so that the proper management can be done in future for the public health.

**Study area:** Udgir, with more than three lakhs inhabitants, is one of the major taluka in the Latur District and facing severe air pollution problems. The Udgir region, spread over an area of 10 km<sup>2</sup>. Increasing Urbanization and industrialization is contributing the alarming level of air pollutants in the city. Udgir has Historical identity that Udgir is one of the major taluka in the Latur District in State of Maharashtra Udgir has population of 200111 as per the census of 2014. It is famous for the battle in between Marathas and Nizam in 1759. The ambient air quality is estimated with the help of High volume air sampler approved by the Central Pollution Control Board New Delhi.

### Materials and Methods

In present study High volume air sampler approved by Central Pollution Control Board Govt. of India is used for the investigation of SO<sub>2</sub>, NO<sub>2</sub> and Particulate matter. As per the standard manual of it instrument is standardized and chemicals were prepared monthly average was calculated and results interpreted.

**Table-1**  
**Levels of SO<sub>2</sub> in 2013**

Month	MUM	Shivaji Chowk	Capt.K. Chowk
Jan	02	05	03
Feb	03	06	04
March	02	04	04
April	04	05	03
May	04	05	04
June	05	06	05
July	03	04	03
August	04	04	03
September	03	05	02
October	03	05	03
November	02	03	02
December	02	05	03

**Table-3**  
**Levels of SPM in 2013**

Month	MUM	Shivaji Chowk	Capt.K. Chowk
Jan	65	90	87
Feb	69	95	75
March	75	94	77
April	80	96	80
May	91	110	90
June	75	93	88
July	65	90	81
August	62	85	78
September	62	87	83
October	60	90	84
November	58	78	78
December	60	75	75

**Table-2**  
**Levels of NO<sub>2</sub> in 2013**

Month	MUM	Shivaji Chowk	Capt.K. Chowk
Jan	07	22	12
Feb	06	23	10
March	07	24	11
April	08	23	17
May	10	27	14
June	08	22	14
July	07	24	13
August	08	20	15
September	09	19	14
October	09	17	12
November	07	18	11
December	09	15	10

**Table-4**  
**Levels of RSPM in 2013**

Month	MUM	Shivaji Chowk	Capt.K. Chowk
Jan	15	42	30
Feb	20	46	32
March	22	47	35
April	25	52	36
May	25	55	37
June	20	51	30
July	21	47	28
August	24	44	30
September	15	43	32
October	14	42	31
November	13	40	29
December	17	38	27

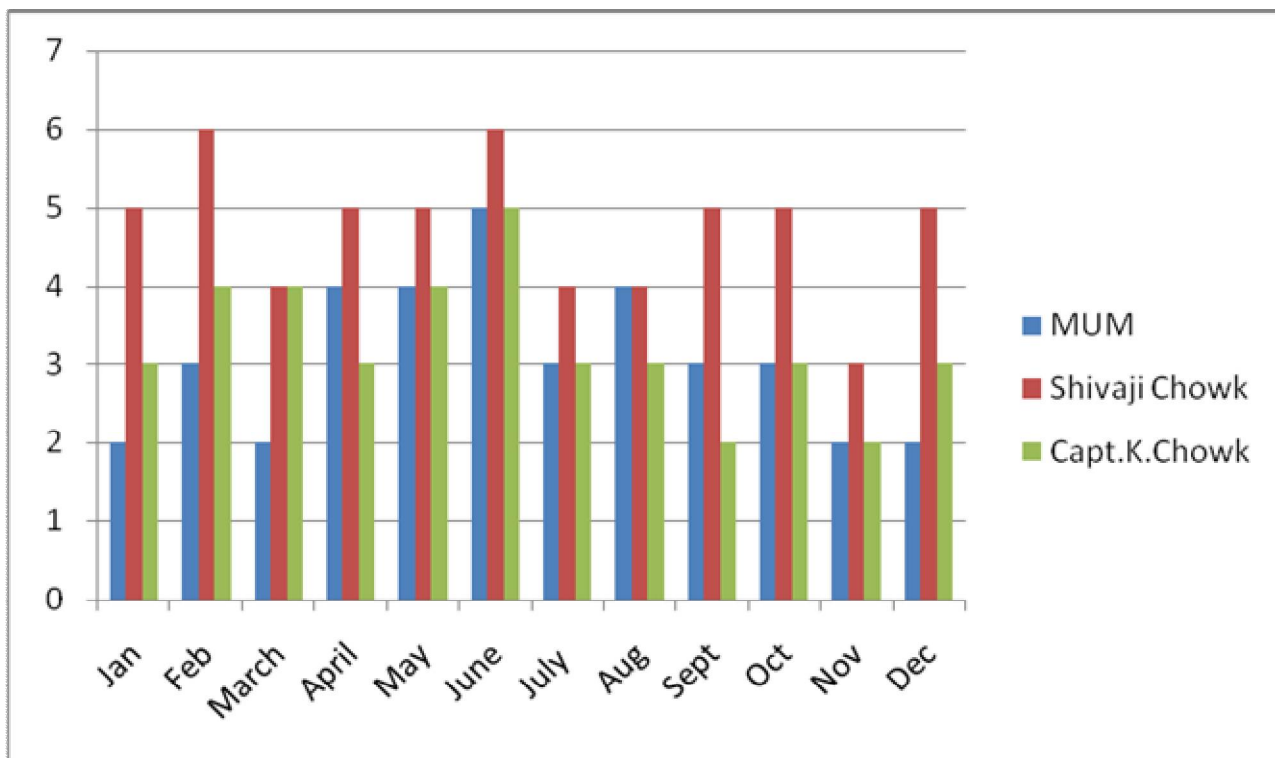


Figure-1  
 Levels of SO2 in micro gram

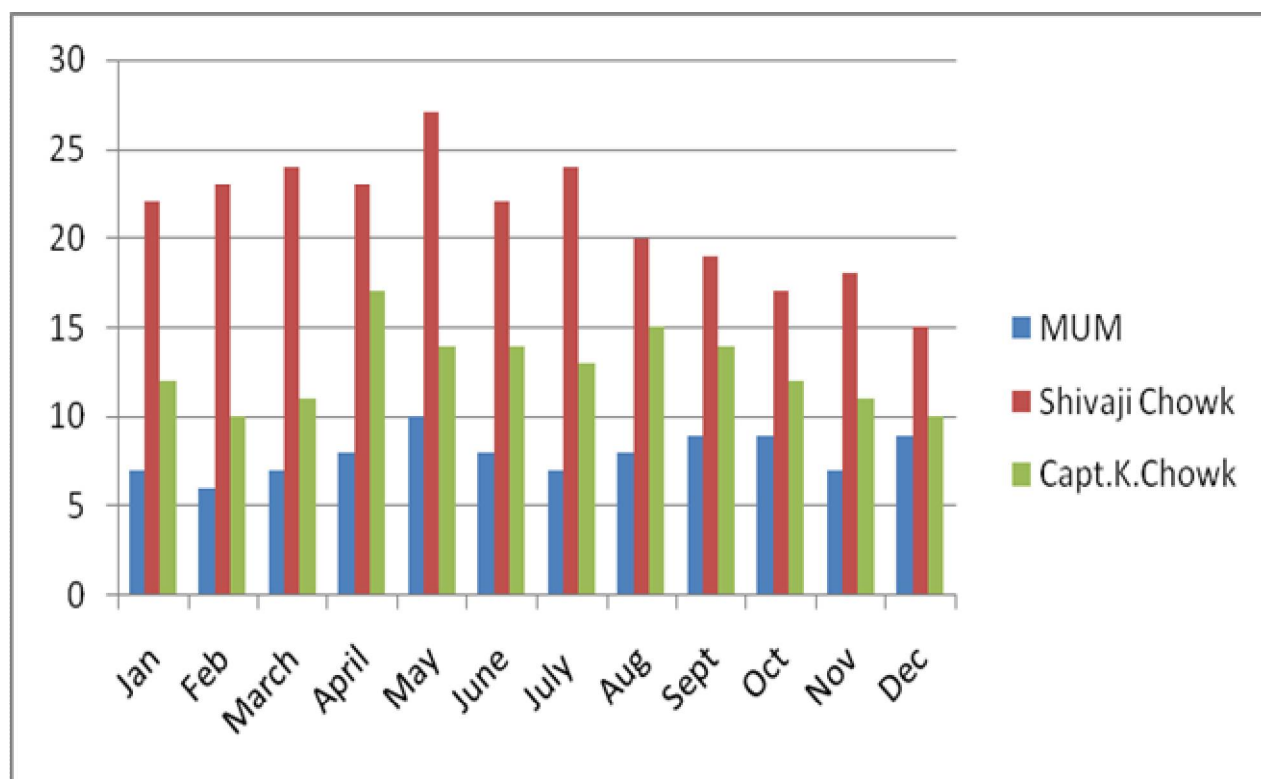


Figure-2  
 Levels of NO2 in micro gram

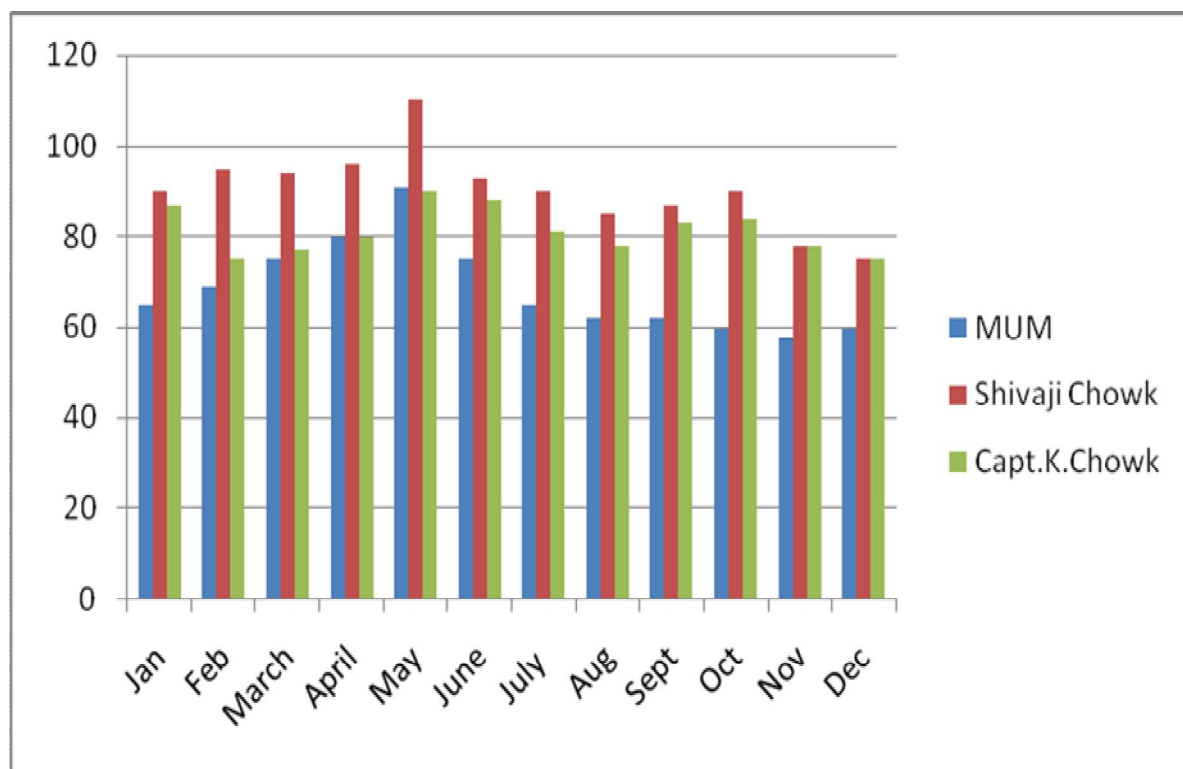


Figure-3  
 Levels of SPM in micro gram

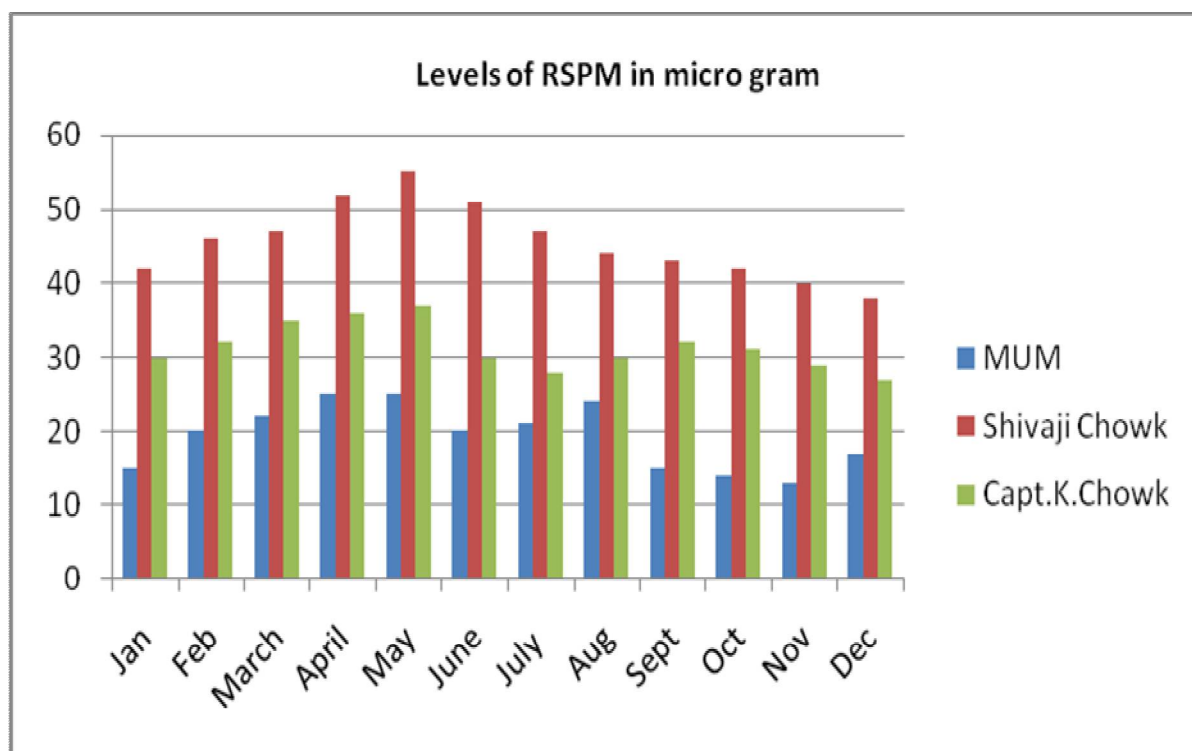


Figure-4  
 Levels of RSPM in micro gram

## Results and Discussion

The highest level of Sox found is in the month of June at MUM, Shivaji Chowk and Capt. K. Chowk 05, 06 and 05 micrograms respectively. The lowest levels were observed in the month of January, March, November and December at MUM with the range of 02 microgram at Shivaji Chowk it is observed as 03 microgram in the month of November and at Capt. K. Chowk it is found 02 microgram in the month of September and November.

The oxides of Nitrogen were observed highest in the month of May as 10 microgram at MUM 27 microgram and Shivaji Chowk, At Capt.K.Chowk 17 microgram in the month of April. The lowest level is observed at MUM February it is 06 microgram at Shivaji Chowk it is 15 microgram in December and at Capt K Chowk it is 10 in December and February.

The amount of SPM found was highest in the month of May it is 91 microgram at MUM and at Shivaji Chowk it is 110 microgram, in Capt K Chowk it is 90 micrograms. The lowest level was observed At MUM was 58 microgram in November and at Shivaji Chowk it is 75 micrograms in December, at Capt K Chowk it is 75 in the month of December and February.

The maximum level of RSPM was observed in the month of April and May at MUM it was 25 microgram, at Shivaji Chowk it is 55microgram in the month of May and at Capt K. Chowk it is 37 micrograms. The minimum levels were observed at MUM was 13 microgram in November, at Shivaji Chowk it is 38 in the month of December and at Capt. K. Chowk it is 27 micrograms in the month of December.

## Conclusion

Udgir city is based on the boundaries of three states Andhra Pradesh, Karnatka and Maharashtra. As it is the market for the

agriculture and oil seeds there is huge traffic of transportation and now a days there is increased urbanization it is also imparting the pollutants in various forms. Though the maximum air pollutants are not above the permissible levels but they show alarming levels. So the precaution should be taken to prevent the higher ranges and steps must be undertaken to control it.

## Acknowledgement

We the authors are very thankful to the Maharashtra Education Society and Principal of Maharashtra Udaygiri Mahavidyalaya, Udgir for providing laboratory support and continuous encouragement for the research.

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