"ANALYSIS OF SPM(SUSPENDED PARTICULATE MATTER) LEVEL IN AMRAVATI CITY"

Jane Manisha[1], Ingole Sangita[2]
[1,2] HOD Dept. environmental science.
Department of Environmental Science, Shri Shivaji Science College Amravati.

ABSTRACT

The health effects of air pollution have been subject to intense study in recent years. Exposure to pollutants such as airborne particulate matter has been associated with increases in mortality and hospital admissions due to respiratory and cardiovascular disease. Suspended particulates matter in ambient air of three stations in Amravati city was collected using a high volume sampling technique. Attention was focused on the roadside, street-level concentration. The sampling was conducted two days in a week. selected location for sampling as MIDC Amravati, Raja Kamal square, Amravati, shri shivaji science college Amravati. This will create awareness within society about health effect.

Key words: Air Pollution, SPM level, Analysis, health, awareness

INTRODUCTION

Air pollution may be broadly defined as the presence of one or more contaminants like dust, smoke, must and odour. The atmosphere which are injurious to human beings, plants and animals which unreasonably interfere with the comfortable enjoyment of life or property. Air pollution seriously damages human beings. [**K. Maharajan, K Samual** 2010] Air pollution means any solid, liquid or gaseous substances present in the atmosphere in such concentration as may be or tend to be injurious to human being or other living creatures or plant or property or environment. [Ganesh, et.,al 2011-12]

Air is the name given to atmosphere used in breathing and photosynthesis. Dry air contains roughly (by volume) 78.09% nitrogen, 20.95% oxygen, 0.93% argon, 0.039% carbon dioxide, and small amounts of other gases. Air also contains a variable amount of water vapor, on average around 1%. While air content and atmospheric pressure varies at different layers, air suitable for

the survival of terrestrial plants and terrestrial animals. [**. Kadam P.B. and Jadhav P. April; 2012**]

Pollution is the introduction of contaminants into a natural environment that causes instability, disorder, harm or discomfort to the ecosystem i.e. physical systems or living organisms [T. Baker]

Particulate matter

Besides PM10, limited monitoring and source apportionment of PM2.5 (particles of size less than or equal to 2.5μm) was also included. As a result, assessment of contributions of different source categories to concentrations of fine particles (PM2.5) that have more severe health impacts was also possible[5] Ever since the advent of the industrial era, anthropogenic sources of PM have been increasing rapidly. [*R. Mohanraj and P. A. Azeez*]

Particulate air pollution is a mixture of solid, liquid, or solid and liquid particles suspended in the air. In practical terms, a distinction is made between PM10 ("thoracic" particles smaller than 10 _m in diameter that can penetrate into the lower respiratory system), PM2·5 ("respirable" particles smaller than 2·5_m that can penetrate into the gas-exchange region of the lung), and ultrafine particles smaller than 100 nm which contribute little to particle mass but which are most abundant in terms of numbers and offer a very large surface area, with increasing degrees of lung penetration [7]

. Natural sources exceed anthropogenic emissions, but the latter are frequently concentrated in urban environments. Natural sources of atmospheric particles are volcanic out gassing, forest fires, sea salt (directly emitted), and gas phase conversion of other atmospheric compounds. Anthropogenic sources are mainly burning of fossil fuels (industrial, transport and domestic burning), diverse industrial processes, mining and agriculture. Industrial and transport emissions are a significant source of particles mainly due to combustion of fossil fuels. They can be responsible of high concentration of particles in the air in great urban settings. However, the distribution of atmospheric particles in urban settings will depend on the characteristics of the urban planning. In canyon streets higher PM emitted by car Engines have been found closer to the ground [**Muchate N. S. and Annarao Maruti Ch** 2011] It is estimated that India annually

emits 144719 Mg of total Particulate matter from open field burning of rice straw (Gadde et al. 2009). [Gadde, B.et.,al 2009]

MATERIAL AND METHODS

The sampling was conducted for 24 hours at all sites and the mass of SPM was determined by weighing the filter, before and after sampling.

RESULTS AND DISCUSSION:

Suspended Particulate (SPM) Matter: The SPM concentrations at Raja Kamal Chowk,Amravati were relatively high as compared to the concentrations at other sector because of high vehicular emissions and wind-blown dust. In these cities, sources of high SPM values include wind-blown dust, emissions from stationary fuel combustion, industrial processes, heavy transport, solid waste disposal, power plants, construction activities etc. Such emissions result in gas to particle conversion in the atmosphere

CONCLUSIONS

The health impacts of air pollution depend on the sensitivity and the exposure level of the susceptible population to the pollutant. The largest health impacts from exposure to fine particulate. Public awareness regarding suspended particulate matter & control the dust emission at source through different technology.

REFERENCE

1. Impact of environmental pollution on health: A sociological study in Tuticorin industrial town, TN, India **K. Maharajan, Kirubakaran Samual** Department of Sociology, DDE, Annamalai University. Annamalai Nagar, Tamilnadu, India. Journal of Ecobiotechnology 2/2: 51-56, 2010 ISSN 2077-0464

2. Ganesh, shree, zaidi, jamshed, and pal, amit, (2011-12)assessment of ambient air quality of Jhansi city, uttar Pradesh, india. J. search and research vol-III No.(2): 45-50

3. **Prashant B. Kadam and Pradeep Jadhav "Health cost in Indian metro cities." Indian**

Streams Research Journal (April; 2012) ISSN:-2230-7850

4. Suspended Particulate Matter in Elliott Bay Edward T. Baker, NOAA Technical Report ERL 417-PMEL 35
5. **Air quality monitoring, emission inventory and source apportionment study for Indian cities. National Summary Report December, 2010**
6. *R. Mohanraj and P. A. Azeez* "* Health effects of airborne particulate matter and the Indian scenario" General Articles
7. **National ambient air quality standards new delhi,wenesday, November 18,2009/kartika 27,1931.**
8. **Niramaya Suresh Muchate and Annarao Maruti Chougule** *Dayanand Science College, Latur, Maharashtra, India.* **"**Study on ambient concentration of air quality parameters (PM10, SPM, SO2 and Nox) in different months" European Journal of Experimental Biology, 2011, 1 (1):90-96
9. Gadde, B.; Bonnet, S.; Menke, C.; Garivait, S. (2009) 'Air pollutant emissions from rice straw open field burning in India, Thailand and the Philippines', *Environmental Pollution* 157, 1554–1558
10. **Parmod Kumar1* and Surender Kumar2 "Valuing the Health Effects of Air Pollution from Agricultural Residue Burning"**
11. **dr.nihal anwar siddiqui, akbar ziauddin . "National resoures & environmental management systems" khanna publishers.**

OBSERVATION TABLE

Ambient Air Quality Data SPM
Sampling Location Shri Shivaji Science College, Amravati
Residential Area Year: 2013

SPM 24 Hrs.Average						
Sr. No.	**January**	**February**	**March**	**April**	**May**	**June**
1	74	93	94	84	95	92
2	84	79	67	101	105	65
3	95	72	101	73	93	76
4	79	83	88	105	108	97
5	59	96	79	98	110	67

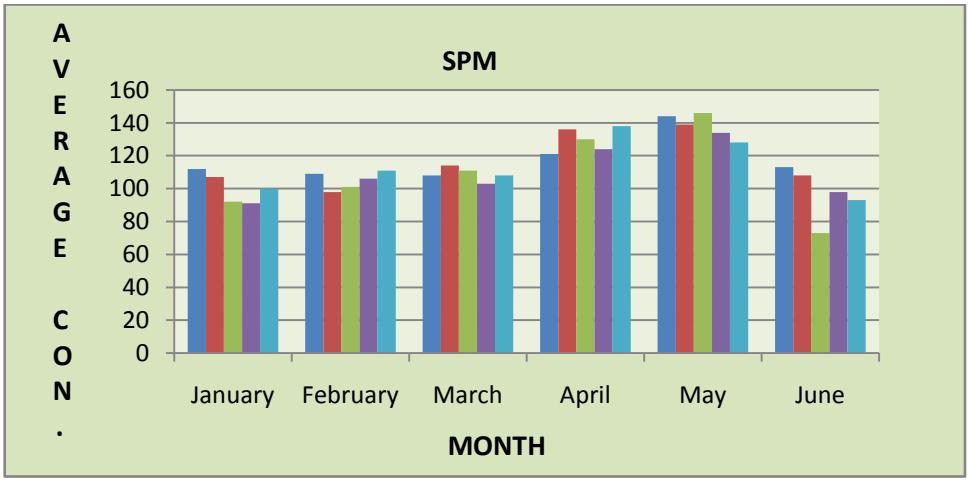
Ambient Air Quality Data SPM
Sampling Location MIDC, Amravati
Industrial Area Year: 2013

SPM 24 Hrs.Average						
Sr. No.	**January**	**February**	**March**	**April**	**May**	**June**
1	112	109	108	121	144	113
2	107	98	114	136	139	108
3	92	101	111	130	146	73
4	91	106	103	124	134	98
5	100	111	108	138	128	93

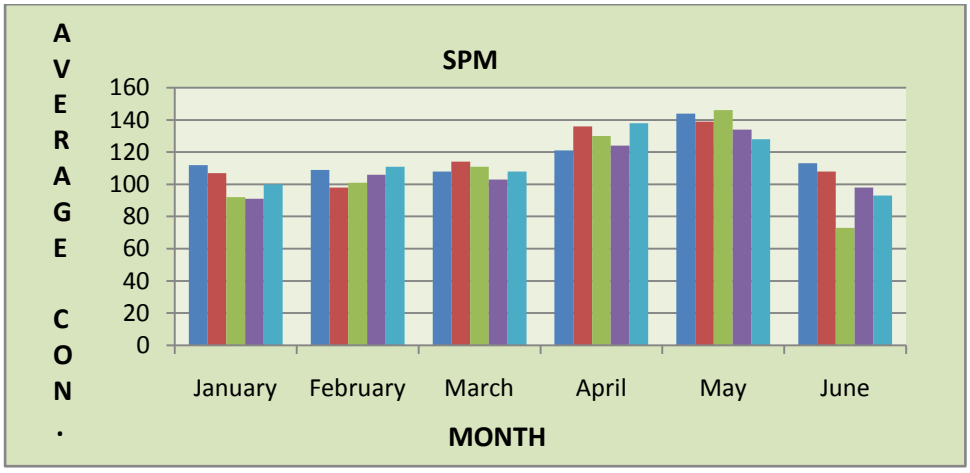
Ambient Air Quality Data SPM
Sampling Location Rajkamal Chauk, Amravati
commercial Area Year: 2013

SPM 24 Hrs.Average						
Sr. No.	**January**	**February**	**March**	**April**	**May**	**June**
1	122	116	138	155	148	143
2	119	100	144	142	156	122
3	115	109	143	152	161	129
4	124	116	136	125	165	136
5	119	124	130	136	163	66

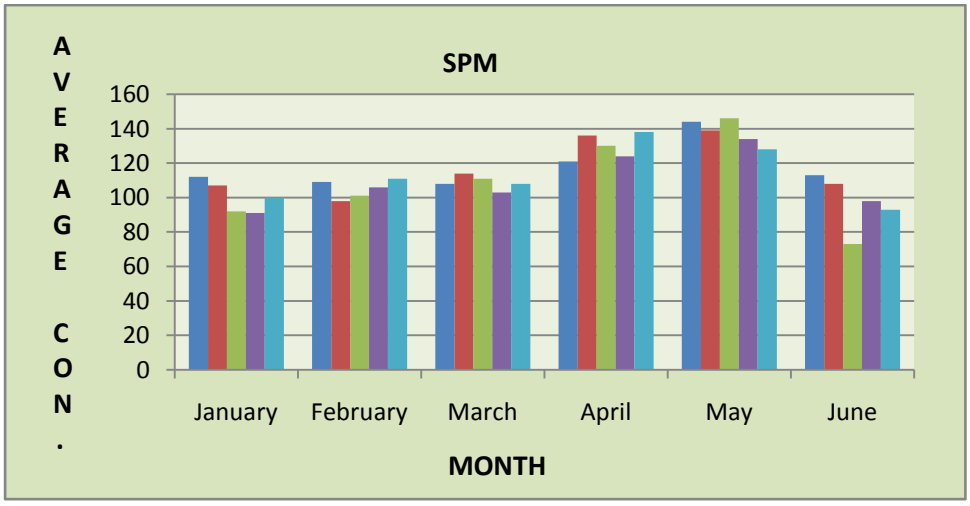
Ambient Air Quality Data SPM Sampling Location Shri Shivaji Science College, Amravati
Residential Area Year**: 2013**



Ambient Air Quality Data SPM Sampling Location MIDC, Amravati
Industrial Area Year: 2013



Ambient Air Quality Data SPM Sampling Location Rajkamal Chauk, Amravati commercial Area Year: 2013



.