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IMPACTS OF URBANIZATION ON VARIOUS COMPONENTS OF ENVIRONMENT IN KADAPA CITY IN Y.S.R.KADAPA DISTRICT

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Abstract: *Probably most of the major environmental problems of the next century will result from the continuation and sharpening of existing problems that currently do not receive enough political attention. The problems are not necessarily noticed in many cities or then nothing is done even the situation has been detected. The most emerging issues are climate changes, freshwater scarcity, deforestation, and fresh water pollution and population growth. These problems are very complex and their interactions are hard to define. It is very important to examine problems through the social-economic-cultural system. Even the interconnections between environmental problems are now better known, we still lack exact information on how the issues are linked, on what degree they interact and what are the most effective measures. One problem is to integrate land- and water use planning to provide food and water security (UNEP 1999).*

The major urban population of Kadapa municipality are unbalanced development of the municipal corporation, pollution (air, noise, water and dust pollution) development of urban slums, shortage of housing, highly congested central business area of the Kadapa municipal corporation, high intensity of residential concentration in the old bus stand area, absence of organized commercial areas and shopping centres with sufficient parking and storage facilities, in adequate city services like water supply, drainage, traffic and transportation, narrow circulation pattern of roads in the old bus stand area, development of slums, encroachment of tanks and solid disposals.

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IMPACTS OF URBANIZATION ON VARIOUS COMPONENTS OF ENVIRONMENT

Probably most of the major environmental problems of the next century will result from the continuation and sharpening of existing problems that currently do not receive enough political attention. The problems are not necessarily noticed in many countries or then nothing is done even the situation has been detected. The most emerging issues are climate changes, freshwater scarcity, deforestation, and fresh water pollution and population growth. These problems are very complex and their interactions are hard to define. It is very important to examine problems trough the social-economic-cultural system. Even the interconnections between environmental problems are now better known, we still lack exact information on how the issues are linked, on what degree they interact and what are the most effective measures. One problem is to integrate land- and water use planning to provide food and water security (UNEP 1999).

WATER POLLUTION

Water pollution has been studied in great detail. The indiscriminate disposal of water after use in the form of waste causes water pollution. The tragic incident of Minnamata in Japan is well known. A paper factory using mercury compounds carelessly dumped its waste effluents into the sea, it formed (CH3)2Hg and (CH3CH2)2Hg, which in turn was consumed by the sea fish. The Japanese people who consumed such fish showed symptoms of mercury poisoning like gingivitis, vomiting, fever, diarrhoea, paralysis of extremities, etc. There were several instances of marine flora and fish dying in the sea, on account of deoxygenation of water, perhaps due to thermal pollution. Most of the rivers in Andhra Pradesh are polluted due to industrial activity.

The pH and concentration of carbonate and bi-carbonate ions are studied in various samples of Kadapa Lake River collected from December 2010 & January – August 2011. The affinity of carbon dioxide towards sea water is also studied in comparative to various other samples like municipal water, rain water, and distilled water.

PROCEDURES

Materials and Apparatus

Polyethene bottles (500 ml), Burette, pipette, conical flask (200ml), phenolphthalein indicator, methyl orange indicator, 0.1N HCl, pH meter, buffer solution (4.0 & 10.0 pH).

Procedure I

- Kadapa lake water samples are collected in polythene bottles.
- 25 ml of sample is taken in a beaker.
- pH meter is calibrated with buffer solutions, temperature is set at 26^0 c.
- pH of the sample is checked and process is continued for three times and the concurrent value is noted down, which gives the pH of lake water.

A Study on Lake Acidification Due to Carbon Dioxide along the lake area of kadapa (Urban)

- Procedure for Calculation of Carbonate and Bi-Carbonate Ions Concentration
- 20 ml of sea water sample is pipette out into a conical flask. 3-4 drops of phenolphthalein are added to it.
- Burette is filled with 0.1N Hcl.
- The lake water sample in conical flask is titrated with 0.1N Hcl till the pink color just disappears.
- The readings are noted down and repeated to get three concordant readings.
- 20 ml of same lake water sample is taken in a conical flask and methyl orange indicator is added to it.
- It is titrated using 0.1N Hcl till a red color is obtained.
- The observations are recorded and repeated to get three concordant readings, which gives the volume of acid consumed.

CALCULATIONS

The observations (a) Using phenolphthalein and (b) Using methyl orange are tabulated and substituted in the equation:

N1V1 (Hcl) = N2V2

Where, N1 = normality of Hcl (0.1N); V1 = volume of acid consumed;

N2 = normality of sea water, V2 = volume of sea water taken (20 ml).

From which phenolphthalein (P) & methyl orange (M) alkalinity against ppm of $CaCo_3$ are calculated.

And if, P<1/2 M, then alkalinity is due to carbonate and bi- carbonate ions.

Carbonate ion concentration = 2P * (30/50) mg/L; bi-carbonate ion concentration = (M- 2P) * (61/50) mg/L.

If, P = 0, then alkalinity is due to bi-carbonate ions.

Bicarbonate ion concentration = (M * 61)/ 50 mg/L.

Procedure II: Affinity of Carbon-Dioxide towards Kadapa lake Water

- Burette is filled with 11.6N Hcl.
- 4g of $NaHCO_3$ is taken in special apparatus (this is a volumetric flask with burette inserted in to it and an opening
- to which a tube is attached which passes through NH_3 (to remove non reacted HCl) and is dipped into sample to be analyzed.
- The pH of sample to be analyzed is measured.
- Now the acid is run down which releases CO_2 which is pumped into sample, i.e. Kadapa lake river (20 ml).
- Then the sample is stirred with a glass rod and left for 15 seconds and the pH of the sample is noted down.
- The same procedure is repeated for municipal water, rain water and distilled water.

Table 1: Affinity of Carbon Dioxide towards Different Samples

Sample	pH
Kadapa Lake water	6.89
Municipal water	5.23
Distilled water	4.84
Rain water	4.26

pH of Samples Collected(20 ml)

Affinity of Carbon Dioxide towards Different Samples

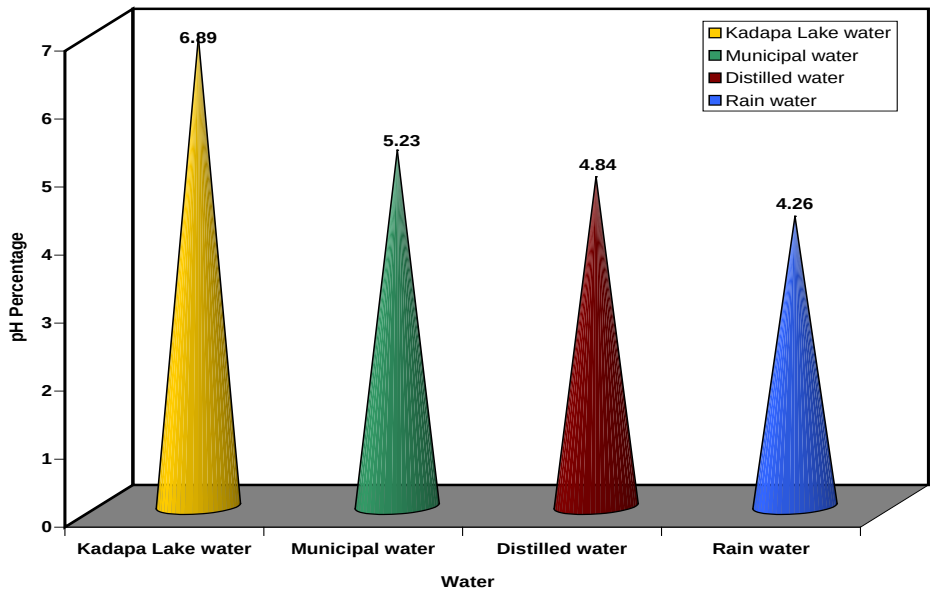


Fig. 1

Table 2: pH of Samples after CO_2 Pumping

Sample	pH
Kadapa Lake water	4.75
Municipal water	4.98
Distilled water	4.52
Rain water	4.03

pH of Samples after CO_2 Pumping

pH of Samples after CO_2 Pumping

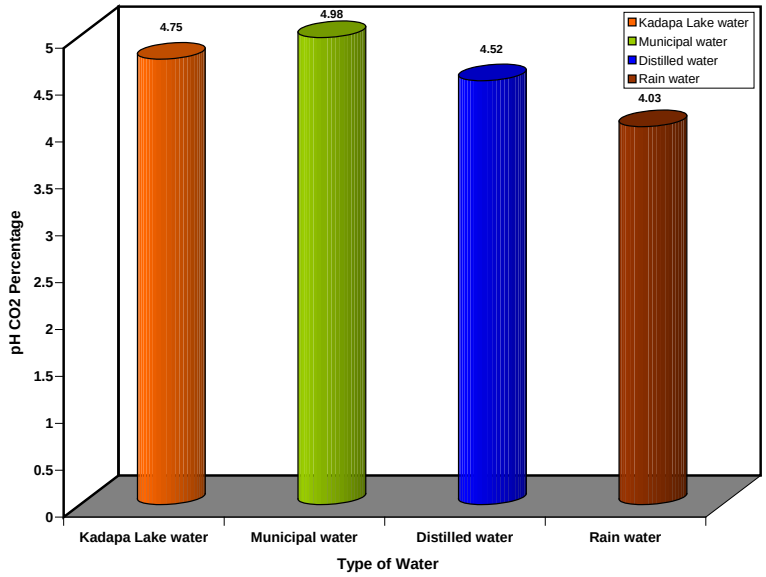


Fig. 2

Table 3: pH of lake water samples collected from December (2010), January to August 2011

Sample	No	pH
December	1	6.89
January	2	6.89
February	3	6.89
March	4	6.89
April	5	6.88
May	6	6.88
June	7	6.88
July	8	6.88
August	9	6.88

(**Note**: These Samples Were Collected on Dry Days; Sample No 5, 6,7,8,9 Were Collected from a Different Point i.e.in Main City)

June to August (2011)

Month	Sample No	pH
June	10	6.81
July	11	6.81
August	12	6.83

(**Note**: These Samples Were Collected after Rain)

Table 4: Showing the Strength of Carbonate and Bi –Carbonate Ions in Collected lake Water Samples

Carbonate Ion Concentration	
Sample No	**Concentration**
1	70 ppm
2	70 ppm
3	69 ppm
4	68 ppm
5	67 ppm
6	66 ppm
7	64 ppm
8	63 ppm
9	62 ppm
10	61 ppm

Table 5: Bi-Carbonate Ion Concentration

Sample No	Concentration
1	44 ppm
2	45 ppm
3	46 ppm
4	47 ppm
5	48 ppm
6	49 ppm
7	50 ppm
8	51 ppm
9	52 ppm
10	53 ppm
11	54 ppm
12	55 ppm

CONCLUSIONS

- The affinity of CO_2 is more for lake water when compared to other water samples.
- As the acidity of lake water increases the carbonate ion concentration decreases.
- The concentration of bi-carbonate ion increases as the pH decreases (due to carbonic acid formation)

- The pH of lake water samples collected soon after rain is less and the concentration of carbonate ions concentration is also less than that of samples collected on a dry day.
- Lake acidification is taking place though a slow process, but the situation has to be monitored and the best way is to reduce carbon dioxide emissions or sequestration.

NOISE POLLUTION

Sound which is pleasing to the ears, which is sweet to here and which gives comfort like musical notes is defined as sound. While one, which is penetrating and uncomfortable, which creates psychological stress is called as noise. Noise word is derived from the Latin word nausea. It is usually defined as unpleasant or desirable loudness sound, or sound without value that causes discomfort to the listener. In law, it may be defined as and excessive, persistent or startling sound.

Noise Pollution is not only the problem of the advanced countries but it has started raising its ugly head in the developing countries too and, India is no exception. India is a noise loving country; on every occasion from birth to death loud noise and band baza is the part of our culture. Playing of loud speakers at full pitch is the most common practice at all the religious, cultural and social functions. With the industrial revolution, population explosion and increase auto vehicles, the situation has become alarming.

Most of the leading noise sources will fall into the following categories; road traffic, air craft, railroads, constructions, industries, noise in building and consumer products.

Anything between 50 and 90 dB is considered noise. While one beyond 90-120 dB is considered to be a health hazard. Entertainment devises (Tabala, Harmonium, Metal utensils) fans, air conditions, washing machines, lawn movers, kitchen appliances (Vacuum cleaner, food mixtures, pressure cookers etc.,) are common source of domestic noise.

Table 6

Monthly Average Noise Levels (Max&Min) Monitored at two Locations in Kadapa Town From April-2010-2011

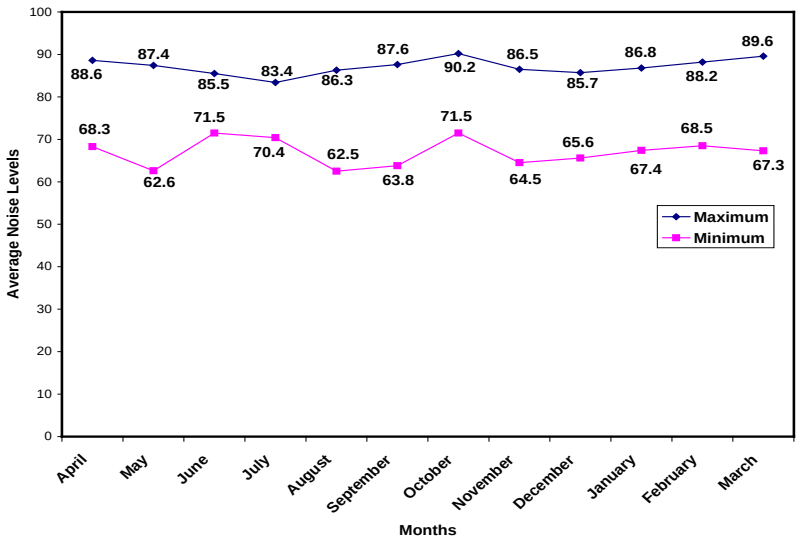
Month	Location-1		Location-2	
	APSRTC Bus Stand in db(a)		Rajiv Srumthi vanam in db(a)	
	Max	Min	Max	Min
April	88.6	68.3	52.4	41.6
May	87.4	62.6	53.5	42.2

June	85.5	71.5	51.3	41.8
July	83.4	70.4	50.8	40.5
August	86.3	62.5	49.3	40.2
September	87.6	63.8	48.9	40.0
October	90.2	71.5	48.5	40.5
November	86.5	64.5	53.7	41.8
December	85.7	65.6	54.2	41.6
January	86.8	67.4	55.6	42.3
February	88.2	68.5	54.6	41.2
March	89.6	67.3	53.3	42.6

In order to analyses the researcher collected and calculated the data by year wise like 2010-11, 2011-12 and 2012-13. Noise pollution data is collected in monthly average noise levels-minimum and maximum monitored at two locations in the Kadapa municipality area from 2010 to 2011(Table No.6). The monthly average noise levels at two locations, one is A.P.S.R.T.C. Bus Stand area and another one is Rajiv Sruthivanam in decibels, maximum in the month of October is 90.2 dB and minimum is 62.5dB, in A.P.S.R.T.C. Bus Stand area and Rajiv Sruthivanam area in the month of January is maximum of 55.6 dB and minimum is 40.0 dB in month of September. The following graph shows that the two locations are identified in variables in month wise April to March. The decibels are high in A.P.S.R.T.C. Bus stand area delivers are very high compared to Rajiv Sruthivanam, because of heavy traffic vehicles like two wheelers and four wheelers which blow horn (Fig.4).

Monthly Average Noise Levels (Max&Min) Monitored at Two Locations in Kadapa Town From April-2010-2011

APSRTC BUS STAND Location -I



RAJIV SRUMTHI VANAM Location – II

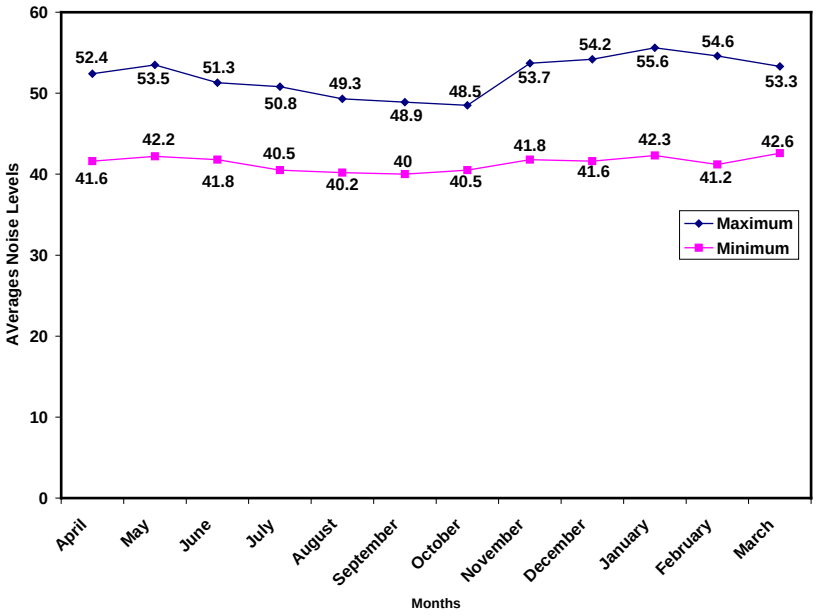


Fig.3

Table 7: Monthly Average Noise Levels (Max & Min) Monitored at Two Locations in Kadapa Town From April-2011-2012

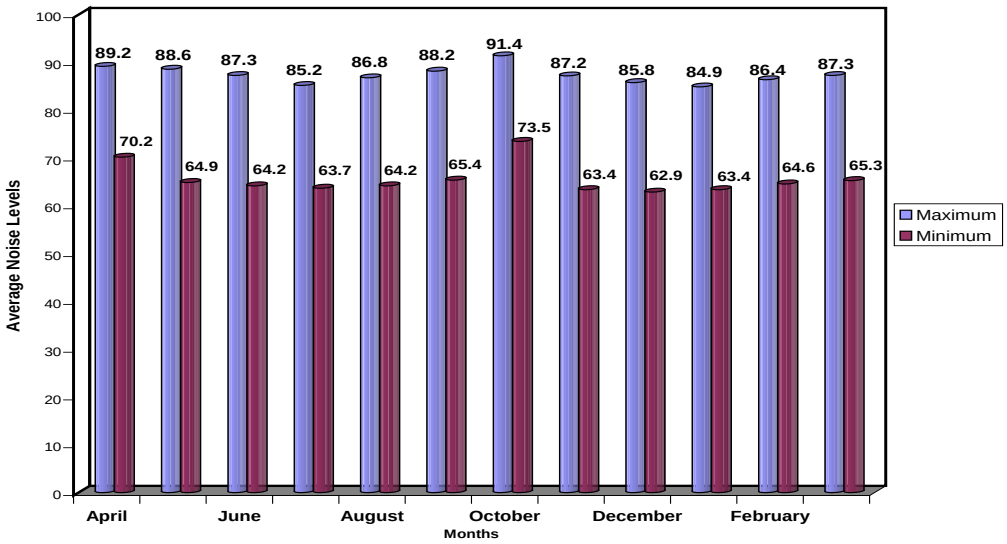
Month	Location-1		Location-2	
	APSRTC Bus Stand in dB(a)		Rajiv Srumthi vanam in dB(a)	
	Max	Min	Max	Min
April	89.2	70.2	53.2	42.3
May	88.6	64.9	54.6	43.2
June	87.3	64.2	53.3	42.8
July	85.2	63.7	51.8	41.2
August	86.8	64.2	50.6	41.0
September	88.2	65.4	49.4	39.5
October	91.4	73.5	51.5	41.5
November	87.2	63.4	54.7	42.4
December	85.8	62.9	56.2	43.4
January	84.9	63.4	57.3	44.2
February	86.4	64.6	58.6	44.8
March	87.3	65.3	56.3	41.4

Monthly average Noise Levels (Maximum and Minimum) Monitored At Two Locations In Kadapa town from during the year 2011- 2012.The monthly average noise levels at two locations, one is A.P.S.R.T.C. Bus Stand area and another one is Rajiv Srumthi vanam in decibels, maximum in the month of October is 91.4 dB and minimum is 62.9 dB in the

month of December in A.P.S.R.T.C. Bus Stand area and Rajiv Srumthi vanam area in the month of February is maximum of 58.6 dB and minimum is 39.5 dB in the month of September. The following graph shows the two locations are identified in variables in month wise April to March. Here the decibels are high in A.P.S.R.T.C. bus stand area and is very high compared than to Rajiv Sruthivanam, because of heavy traffic vehicles by two wheelers and four wheelers which blow horn (Fig.5).

Monthly Average Noise Levels (Max&Min) Monitored at Two Locations in Kadapa Town From April-2011-2012

APSRTC BUS STAND Location -I



RAJIV SRUMUTHI VANAM Location – II

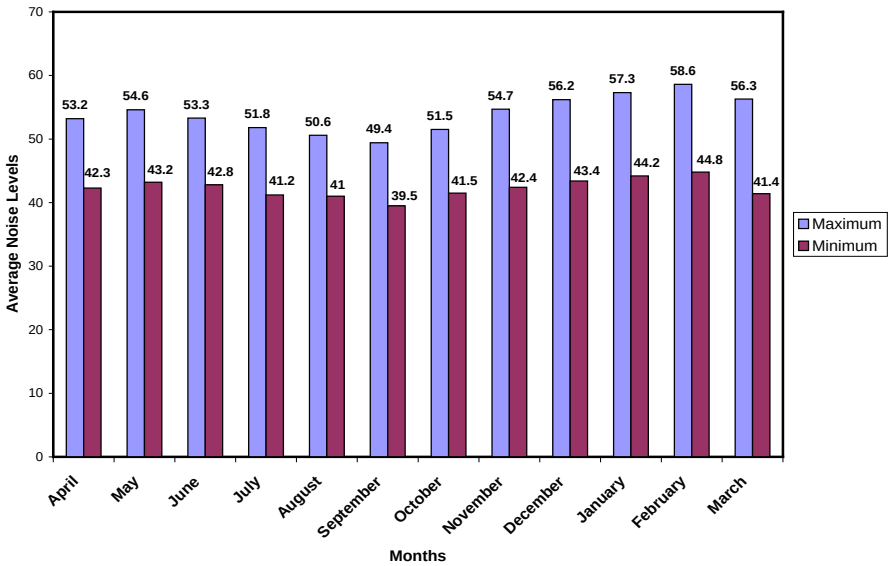


Fig. 4

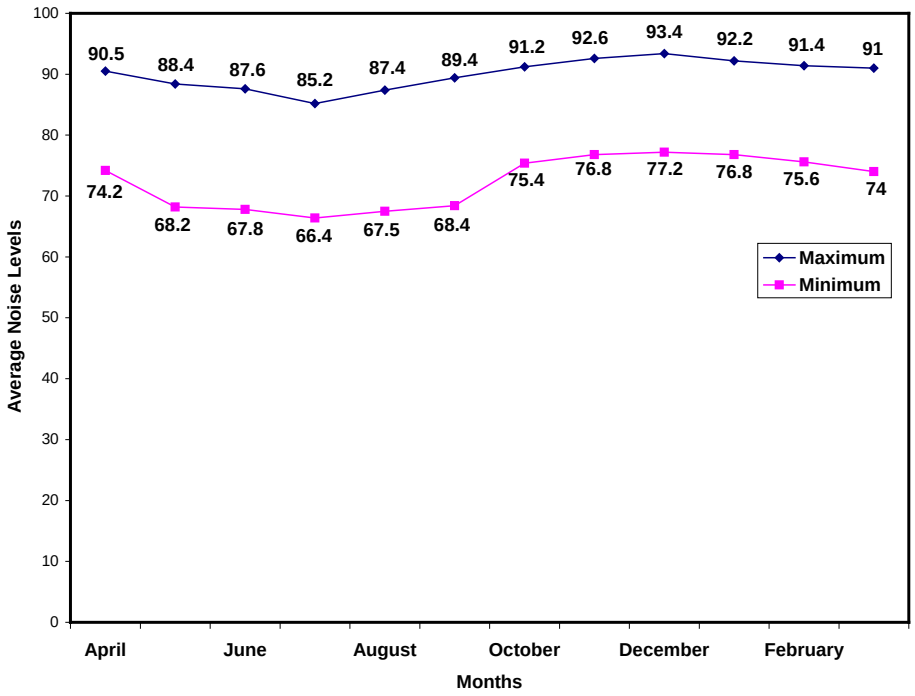
Table 8: Monthly Average Noise Levels (Max&Min) Monitored At Two Locations In Kadapa Town From April-2012-2013

Month	Location-1		Location-2	
	APSRTC Bus Stand in dB(a)		Rajiv Srumthi vanam in dB(a)	
	Max	Min	Max	Min
April	90.5	74.2	57.2	43.6
May	88.4	68.2	56.6	44.2
June	87.6	67.8	55.4	45.8
July	85.2	66.4	54.8	43.4
August	87.4	67.5	53.2	41.2
September	89.4	68.4	54.8	40.8
October	91.2	75.4	55.4	41.6
November	92.6	76.8	56.6	41.2
December	93.4	77.2	57.2	43.4
January	92.2	76.8	56.8	42.8
February	91.4	75.6	55.4	43.2
March	91.0	74.0	56.2	42.6

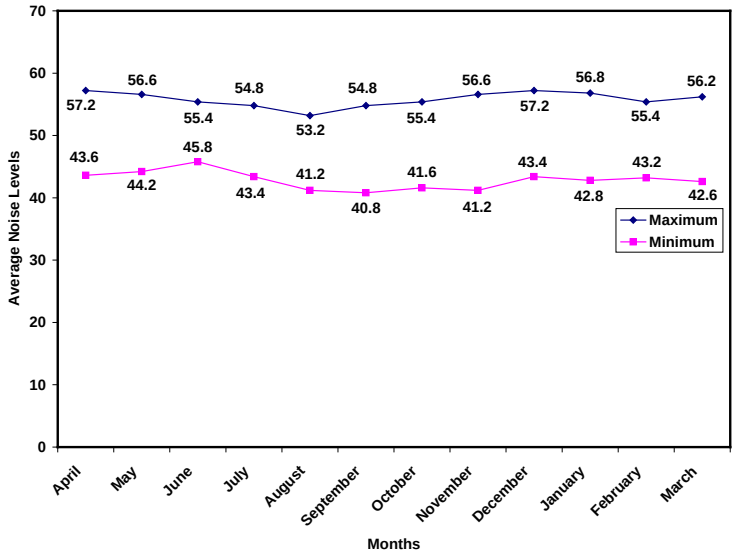
The noise Pollution of the Kadapa municipal area in the during year 2012-2013 at various stages to be identified them. In particularly the heavy vehicles are exposed the Cobondixiede and other form of gases. That's way atmosphere are polluted and environment is degradation of to control such kind of pollutions in kadapa municipal areas. Mean monthly average noise pollution levels are in A.P.S.T.R.C. Bus stand areas and Rajiv Sruthivanam areas are better than first location area. The mean maximum of noise pollution was 93.4 dB in month of December and Minimum of 66.4 dB in month of July. Rajiv Sruthivanam mean maximum was 52.7 in two months like April and December months and mean minimum was 40.8 dB in month of September. The following graph shows that A.P.S.T.R.C. Bus stand areas, Rajiv Sruthivanam locations have too very much noise pollution (Fig.6).

Monthly Average Noise Levels (Max&Min) Monitored at Two Locations in Kadapa Town From April-2012-2013

APSRTC BUS STAND Location -I



RAJIV SRUMUTHI VANAM Location – II



CONCLUSIONS

- From this we can conclude that some causes of damage to the environment due to urbanization lies in the legislation and the regulating agencies if the country.

- Failure of governance in today's cities has resulted in the growth of informal settlements and slums that constitute unhealthy living and working environment.
- Serious attention should be given to the need for improving urban strategies, which promote efficiency in resource use.
- Vehicular pollution control in metropolitan cities and other cities deserves top priority.
- Urgent attention should be given to reduce the generation of solid waste at the sources through mandatory standards and regulation fee and tax incentives, and education and voluntary compliance.
- In case adequate steps are not taken to prevent pollution and to improve the quality of life by providing more social amenities, the life of the urban dwellers of India may become more miserable this may be the cause of health hazards and worst devastation.

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