Peer Reviewed International Research Journal of Geography
Maharashtra Bhugolshastra Sanshodhan Patrika
ISSN : 0971-6785 {Impact Factor 4.567 Renew (IIFS)} Vol. 38, No.1, Jan-Jun 2021. pp 112-117

"Municipal Solid Waste (MSW) Management in Sangamner City. In Ahmednagar District (M.S.),"

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Abstract

For Comprehensive critical and informative valuation Waste management provides a broad data for resource management programs. Municipal or Household waste are often generated from numerous sources significant to human activities. Solid waste management is a term that is used to refer to the process of collecting and treating solid wastes. It also offers solution for recycling item they do not belongs to garbage or trash.

This paper focuses the Municipal solid waste (MSW) of sangamner city. Sangamner City is a small city located in the state of Maharashtra, Ahmednagar District. The city is located on the bank Pravara River. The city covers the area about 16.322 km and the population is 65804 as per 2011 census. The 63% of the total area is urban area which is facilitating by municipal. The city generated total waste 25.8 MT per day in 2019. Among this 10MT per day is Dry waste, 15 MT per Day is Wet Waste and 0.8MTper Day is Hazardous Waste. The study shows that there is a proper management of the wet waste produced in the city by the Municipal government. It also observed that the nearby residency area is facing some amount of health issues and environmental issue. The aim of this study is to compare from an environmental point of view, different alternatives for the management of municipal solid waste generated in the city. The probability that in 2020 the waste generation would be in between 20 to 30MT per day , the municipal have greater chances to handle the disposal with scientific methods it also indicate that sangamner required more sites for betters disposal of solid waste because there is a significant relationship between the population and Total Per day generation (TPD).

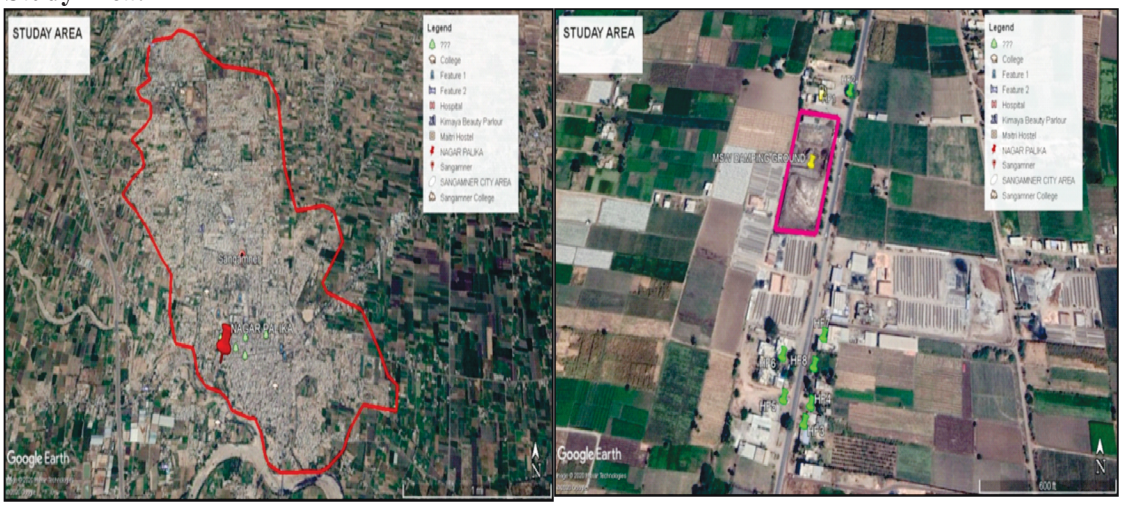
Keywords: *Municipal solid waste, Waste Management, Environment Impact.*

Introduction

Municipal solid waste management is a major environmental issue in India. Due to rapid increase in urbanization, industrialization and population, the generation rate of municipal solid waste in Indian cities and towns is also increased. Mismanagement of municipal solid waste can cause adverse environmental impacts, public health risk and other socio-economic problem. Solid waste has harmful impact on air, land and water resources, this waste management problem is more in developing area than in the developed one due to fast urbanization (Kameswar Rao, S. 2019). This paper presents an overview of current status of solid waste management in India which can help the competent authorities responsible for municipal solid waste management and researchers to prepare more efficient plans(© 2015 The Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences). The Municipal solid waste is used for the solid mixed by products of different human activates. SWM is the basic service of smart city to manage the environment in more sustainable way (Ismail et al. 2019). The waste generally contains the paper, plastics, metals, cloths, food waste, dead animals, electric waste etc. Waste management in India is purview under Union Ministry Of Environment, Forests and Climate change (MoEF&CC). In 2016 this ministry released the solid wastage Management (SWM) Rules, 2016. Population growth is a major contributor to increasing MSW in India.(S.Kumar et al 2017)

Urban India generated 62 Million tonnes of Municipal Solid waste each year, of this about 43 Million tonnes (70%) is collected and 11.9 Million tonnes (20%) is treated. About 31 Million tonnes (50%) is dumped in landfill sites (R.Joshi et al.2016).

Study Area:



Sangamner is populated town in Ahmednagar district of Maharashtra, India. The geographical extent of Sangamner is 19034'51.9564" N latitude and 740 12' 18.0324" E Longitude. The city has an area approximate 16.322 km and has 65804 populations as per the 2011 census. The waste products are not similar because there are various human activates which lead to various wastes generation; other aspects are income level, living standard, education to define the quantity and quality of the waste products. The most of the waste generated by city include wet waste like paper, vegetable waste, market waste, cloths, and dry waste have mostly plastic. The living standard and income level of the household is having positive relation to waste generation. The dry and wet matter tends to decompose leading various smell and odor problems to decompose this organic matter MSW use different methods for recycling this waste (N.Gupta et al.2015).

The Sangamner city generate 20 MT tonnse of solid waste per day recently in 2019 the city generate 25.8 MT per day of Municipal solid waste. The Nagarpalika of Sangamner separated this solid waste into organic (wet), inorganic (dry) and hazardous waste.

The production of wet waste is more nearby 15 % wet waste is produced in city. This waste is again separated for proper utilization. The 3 MT per day wet waste is use as Garden compost. There are 26 gardens under municipal out of them 9 gardens are have benefits from garden compost. The 5 MT per day is handled scientifically with the generation of the biogas plant the 150kw Energy is generated through this wet waste. 7 MT of wet waste is used as compost and vermicomposting further it is utilized by the local farmers as fertilizer.

The dry waste is generated about 10%. It includes plastic, metals, rubber bottles etc. All this waste is recycled by tie-up with local contractors as well as the plastic is recycle and export to Malegaon factory. The another waste is hazardous waste contributing 0.8 MT per day it is very less is quantity and neglected by the municipal. The urbanization contributes greater amount of Municipal Solid Waste (MSW) generation and also damages the environment and causes the health issues. Therefore it is essential to study the solid waste management.

Methodology:

To obtain the data several visits are arranged to the Sangamner Nagarpalika office and landfill site (sunilthitame et al.2009). After visits the manual work is carried out accordingly Questioners were design and surrey was conducted at Municipal office of Sangamner Nagarpalika. The waste which is collected from household, commercial establishments, etc. are more concerned with health and sanitation and to know the health and environmental impact, the 8 household were selected and general survey was conducted (P. Mokale 2019). For the study the arithmetic mean, product moment

and linear regression, standard deviation is compute to know the relationship of population and generating waste and investigating the relationship between waste fraction Total Per day and population (M.Edjaboe et al. 2017).

Hypothesis:

The following research hypotheses have been formulated for the purpose of the study

1. There is significant difference between Total per day solid waste management system and Total population.
2. There is significant difference between Health, Environment and improper solid waste disposal behavior.

Result and Discussion:

On analysing the results shown in following tables and graph: It is seen that in graph (fig1.1) there is increasing trend in population as well as Waste generation in Sangamner city. The city is generation more in year 2017 to 2019.

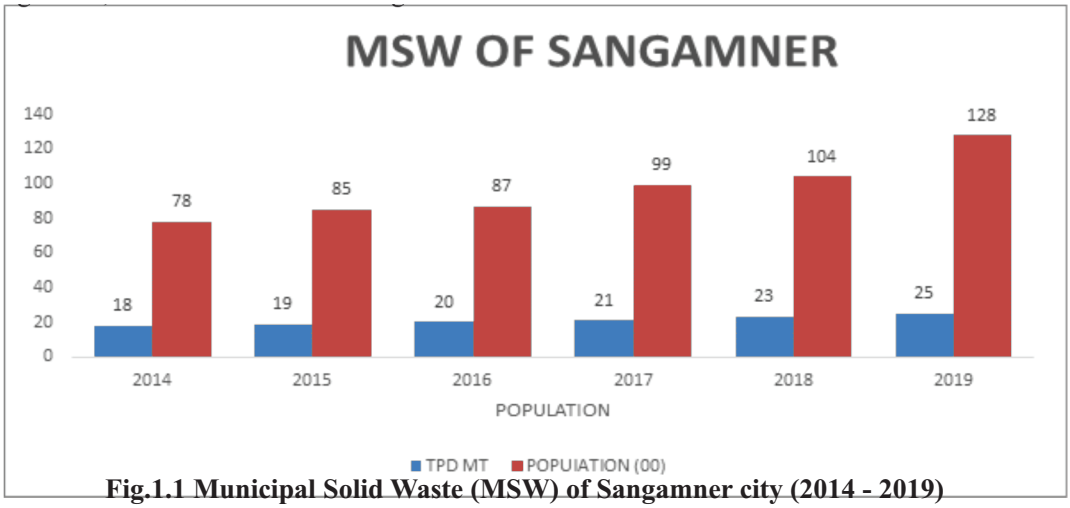


Fig.1.1 Municipal Solid Waste (MSW) of Sangamner city (2014 - 2019)

It is observed from the table 1, the product moment value is (r) is 0.9978 and the coefficient variance is (r2) is 0.994. The significant test is 36.40 is shows the positive relation between the population and the generation waste. The regression line shows the positive relation with its residues

Table 1

Summary	Value
R	0.9978
R^2	0.994
Significant Test	36.40
Y	12.6
B	0.2128
A	0.24

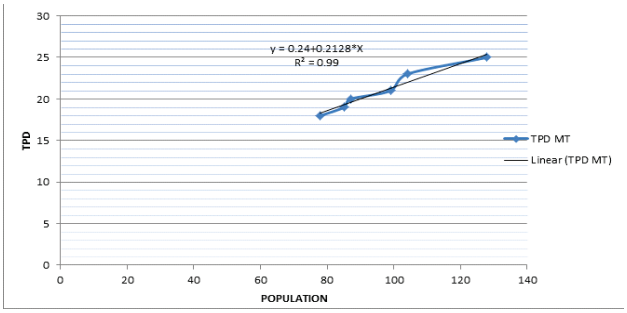


Fig 1.2 Linear Regression Equation of Total per Day MSW

The Calculated value is grate then tabulated value thus alternative hypothesis is accepted there is significant relationship between number of population and municipal waste disposal.

Probability of 2020 (MSW) :

The table 2 shows that there is 99.78 % for the generation waste per day Between 20 to 30MT.

it is computed on the basis of Z score, standard deviation and mean value. The average total par day collection of municipal solid waste of Sangamner tehsil is 21 TPD/ tones and standard devotion is 2.38 TPD/ tones, so it is necessary to developed new landfill site for disposal.

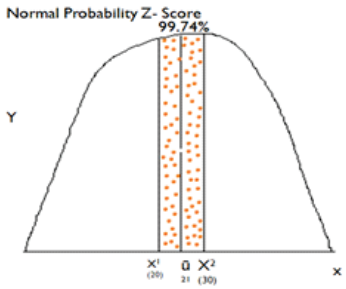


Table 2

Summery	Value
Mean	21
Standard Deviation	2.38
Less than20 (X^1)	0.1786
More than 30 (X^2)	0.07841
Between 20 to 30	99.47

Per capital generation waste:

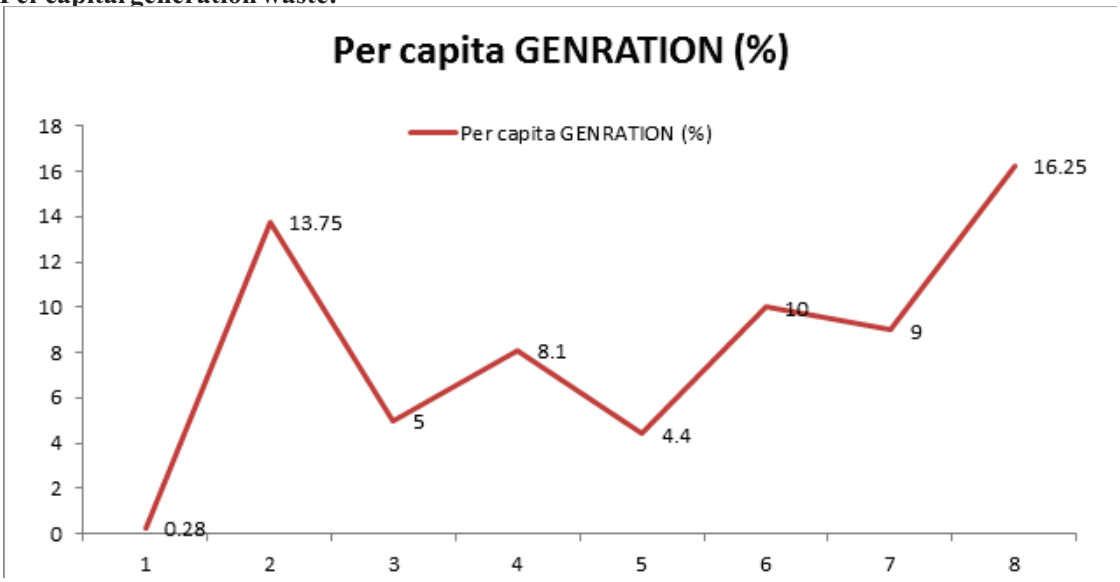


Table 3

No. of HOUSHOID FAMILIY	Waste Generation	Per capita GENRATION (%)
1	35	0.28
2	55	13.75
3	45	5
4	65	8.1
5	40	4.4
6	60	10
7	45	9
8	65	16.25

The Per Capital Generation of Household near Municipal landfill site is having 16.25 % of waste generation and lowest is 0.28 this difference is due to Demographic factors like education, number of family members, income level it is shown in table no.3 and Fig.1.4

Environmental And Health Issues:

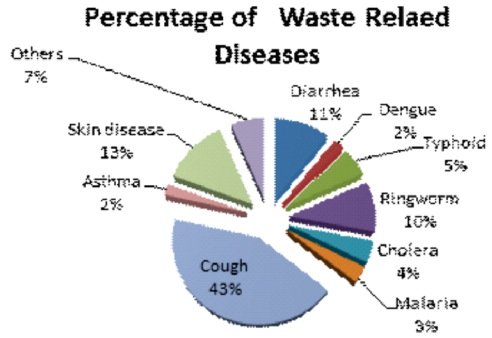


Fig.1.5 Waste Related Diseases

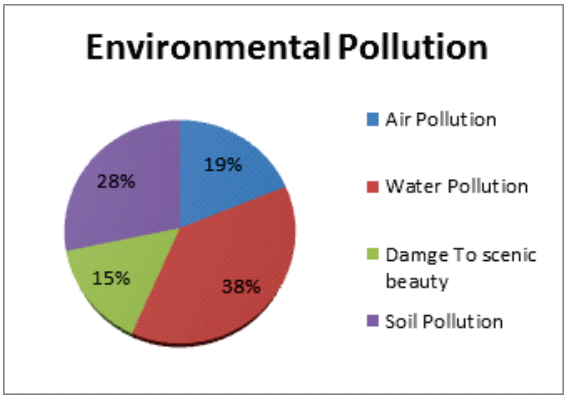


Fig.1.6 Referred source of Pollution

Substance of solid waste contaminated the landfill site increasing soil and water pollution and also increasing the health at risk (Rezazadeh Abdoli 2014,M.Bovea2010).The Environmental and Health problems are shown in pie diagram (Fig 1.5 and 1.6) . It can be seen that more people are affected by cold and cough followed by skin diseases. This indicated water and vector induces diseases are dominant. The people are more concern about the water and soil pollution and give more rank to water and soil pollution.

Conclusion:

Sangamner city has only one landfill site and disposal of solid waste. Nearby places are affected by this site because Solid Waste contain toxic and great variety of pathogenic microorganisms that does harmful impact on human health as well as on environment. All producer of solid waste disposal give rise problem of public and worker health. While the field visits it is observed that the most of the family members of household is suffering from water and vector induced diseases at least ones in a last six weeks. The general public does not have technical knowledge and fund to reduce the adverse effects of the solid waste. Though the solid waste is generating the employment to general public almost 128 bag pickers are allotted by Nagarpalika but still the health problems is major issue in resident as well as workers. The Diseases like Diarrhea, Dengue, Ringworm, Typhoid, Cough, Skin disease, Asthma etc. are common. These diseases are Waste-related waterborne and vector infectious diseases. The municipal of Sangamner is trying harder to solve this problem. Many handling management are working like Em solution to reduce the Air Pollution, Use of Biogas as energy fuel. The legacy waste is utilized as garden compost. Chicken waste is collected by Agriculture industry of Amravati that later on used as fish food. But still this all Action is not as much of to compare with the environmental problems like Air pollution, Soil Pollution, Water Pollution. The General Public are more concerned about Water pollution, and it can be directly observer with the help of current situation.

Acknowledgement:

This study was part of an investigation of the details Municipal Solid Waste (MSW) Disposal and its impact on Environment and public health in Sangamner city. Authors are Thankfull to Sangamner Municipal (Nagarpalika) office for providing essential data. The Authors are thankful to Mr.Sagar Gosawi and Mr.Pramod Thitame to their support in Field visits.

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