

A STUDY ON THE PREVAILING SOLID WASTE IN TIRUNELVELI CORPORATION, TIRUNELVELI DISTRICT

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ABSTRACT

A high rate of growth of population and increasing per-capita income have resulted in the generation of enormous solid waste posing a serious threat to environmental quality and human health. Improper MSW disposal and management causes all types of pollution: air, soil and water. Indiscriminate dumping of wastes contaminates surface and ground water supplies Greenhouse gases are generated from the decomposition of organic wastes in landfills, and untreated leachate pollutes surrounding soil and water bodies. Health and safety issues also arise from improper MSWM. Insect and rodent vectors are attracted to the waste and can spread diseases such as cholera and dengue fever. The U.S. Public Health Service identified 22 human diseases that are linked to improper MSWM. Waste Worker and pickers in developing countries are seldom protected from direct contact and injury, and the co-disposal of hazardous and medical wastes with MSW poses serious health threat.

Keywords: Prevailing Solid Waste, Composition of Solid Waste, Solid Waste Mismanagement.

Introduction

Solid waste is the term used to describe non-liquid waste materials arising from domestic, trade, commercial, agricultural, industrial activities and from public services. Wastes that arise from a typical urban society comprise of garbage, rubbish (package materials), construction and demolition wastes, leaf litter, hazardous wastes, etc. If not managed properly, these wastes can have an adverse impact on the environment and public health arising from contamination of soil, water and pollution of air and through spread of diseases via vectors living on waste. The relationship between public health and the improper storage, collection and disposal of solid wastes is quite clear. Because of their intrinsic properties, discarded waste materials are often reusable and may be considered a resource in another setting. Ecological phenomena such as water and air pollution have also been attributed to improper management on solid wastes.

From the days of primitive society, humans and animals have used the resources of the earth to support life and to dispose wastes. In those days, the disposal of human and other wastes did not pose significant problems as the population was very small and the area of land available for the assimilation of such wastes was large. However, today, serious consideration is being given everywhere to this burgeoning problem of solid wastes. Rapid population growth and uncontrolled industrial development are seriously degrading the urban and semi-urban environment in many of the world's developing countries, placing enormous strain on natural resources and undermining efficient and sustainable development.

Review of Literature

Pervez Adam &Kafeel Ahmade (2013) has observed that, urbanization and population growth are solely responsible for high increasing rate of solid waste and its proper management is a major problem of Municipal Corporation. Improper Municipal Solid Waste disposal and management causes all types of pollution: air, soil and water. Indiscriminate dumping of wastes contaminates surface and ground water supplies. Solid waste from household and the community are a serious health hazard and lead to the spread of infectious diseases.

Balasubramanian, M. and Dhulasi Birundha, V. (2012) have noted that, the increasing level of solid waste, is now a days, a serious problem in the urban and rural areas. A high rate of growth of population and increasing per-capital income has resulted in the generation of enormous solid waste posing a serious threat environmental quality and human health. Improper disposal of waste often results in spread of diseases and contamination of water bodies and soils. The impacts of these wastes on the economy cannot be ignored and managing them has become a major problem.

Objectives of the study

The specific objectives of the study are as follows

- To study the type of prevailing solid waste and composition of solid waste in urban area of Tirunelveli Corporation.
- To examine the environmental impact of solid waste with respect to health of the urban residents in Tirunelveli Corporation.
- To suggest policies for the better management of solid waste in urban areas of Tirunelveli Corporation.

Methodology

The study is concerned with environmental degradation in Tirunelveli Corporation. 100 respondents were selected as sample from five zones of Tirunelveli Corporation under the stratified random sampling method. The study was based on primary data. The primary data has been directly collected from the respondents through structured interview questionnaire.

Data Analysis and Interpretation

Table 1.1 Classification of the generation of prevailing solid waste

Sl.No.	Particulars	Frequency	Percentage
1.	Kitchen waste, vegetables, flowers, leaves, fruits	20	40
2.	Old medicines, chemicals, bulb, batteries, shoe polish, spray cans	08	16
3.	Paper, glass, metals, plastics	10	20
4.	All the above	12	24
	Total	50	100

Source: Primary Data

The above table 1.1 reveals that the generation of prevailing solid waste of the respondents. Majority 40 percent of the respondents are belong to kitchen waste, vegetables, flowers, leaves, fruits, 24 percent of the respondents are belong to all the above and 20 percent of the respondents are belong to paper, glass, metals, plastics and remaining 16 percent of the respondents are belong to old medicines, chemicals, bulb, batteries, shoe polish, spray cans. Majority of the respondents are belong to kitchen waste because kitchen waste are too much food is cooked, prepared and served and so leftovers are produced.

Table 1.2 Classification of composition of solid waste per week (kg)

Sl.No.	Particulars	Frequency	Percentage
1.	Less than 500 gms	15	30
2.	500gms – 1 kg	05	10
3.	Above 1 kg	30	60
	Total	50	100

Source: Primary Data

The above table 1.2 shows that composition of solid waste per week. Majority 60 percent of the respondents have the composition of solid waste per week is above 1 kg, 30 percent of the respondents have the composition of solid waste per week is less than 500gms and remaining 10 percent of the respondents have the composition of solid waste per week is 500gms – 1 kg. Majority of the respondents have the composition of solid waste is above 1 kg per week because consumption increased extensively due to population growth, economic development and urbanization and is responsible for generation of huge quantities of solid waste causing environmental hazards

Table 1.3 Classification of composition of solid waste per month (kg)

Sl.No.	Particulars	Frequency	Percentage
1.	Less than 4 kg	25	50
2.	4 kg – 8 kg	15	30
3.	Above 8 kg	10	20
	Total	50	100

Source: Primary Data

The above table 1.3 explains that the composition of solid waste per month (kg). Majority 50 percent of the respondents have the composition of solid waste is less than 4 kg, 30 percent of the respondents have the composition of solid waste is 4 kg – 8 kg and remaining 20 percent of the respondents have the composition of solid waste is above 8 kg. Majority of the respondents have the composition of solid waste per month is less than 4 kg because municipal solid waste generated depends upon a number of factors such as food habits, standard of living and degree of commercial and industrial activity.

Table 1.4 The linear regression analysis between prevailing solid waste generated and Composition of solid waste per month

Variables	a	b	Beta	T	Sig.
Prevailing solid waste	1.884 (0.057)	0.137 (0.022)	0.275	6.20	0.000

Source: Primary Data Note:

Independent Variable = Prevailing solid waste

Dependent Variable = Composition of solid waste per month

R² value = 0.75, brackets indicate standard error

The above table 1.4 explains that prevailing solid waste has a negative coefficient value of 0.137 and therefore an increasing solid waste would likely lead to an decrease in composition of solid waste per month. It explains that an increase in 1% prevailing solid waste would likely decrease in composition of solid waste per month by 0.137. However the relationship shows a significant correlation of beta value 0.275. The relationship is also significant at 5% level and 10% level also p

value is (0.00) < 0.05. It shows that the relationship is significant at 5% level. Therefore from the analysis, the researcher concludes that prevailing solid waste had significant impact on solid waste.

R2 value the variable suggests the variable of 75% variations.

Table 1.5 Classification of the effects related to poor solid waste mismanagement

Sl.No	Particulars	Frequency	Percentage
1.	Proliferation of flies and mosquitoes	15	30
2.	Skin problem	12	24
3.	Bad odour and infection	10	20
4.	Risks of injury	05	10
5.	Common cold and cough	08	16
	Total	50	100

Source : Primary Data

The above table 1.5 shows that the effects related to poor solid waste mismanagement. Majority 30 percent of the respondents are affected by proliferation of flies and mosquitoes, 24 percent of the respondents are affected by bad odour and infection, 20 percent of the respondents are affected by skin problem, 16 percent of the respondents are affected by common cold and cough and remaining 10 percent of the respondents are affected by risks and injury. Majority of the respondents are affected by proliferation of flies and mosquitoes because flies and mosquitoes stay around in some places more than others.

Table 1.6 Classification of solid waste affects the health condition

Sl.No.	Particulars	Frequency	Percentage
1.	Dengue fever	10	20
2.	Viral fever	15	30
3.	Malaria	03	06
4.	Cholera	04	08
5.	Cancer	02	04
6.	Common cold and cough	09	18
7.	Common fever	07	14
	Total	50	100

Source: Primary Data

The above table 1.6 shows that solid waste affects the health condition. Majority 30 percent of the respondents are affected by viral fever, 20 percent of the respondents are affected by dengue fever, 18 percent of the respondents are affected by common cold and cough, 14 percent of the respondents are affected by common fever, 8 percent of the respondents are affected by cholera, 6 percent of the respondents are affected by malaria and remaining another 4 percent of the respondents are affected by cancer. Majority of the respondents are affected by viral and dengue fever because Aedes species mosquitoes prefer to breed in man-made plastic chikungunya viruses.

Table 1.7 One way ANOVA between solid wastes affects the health condition and effects related to poor solid waste mismanagement

	Sum of Squares	df	Mean Square	F	Sig.
Between groups	372.638	4	93.159	8.206	0.000
Within groups	5324.544	469	11.353		
Total	5697.181	473	16.2		

Source: Computed Data

The above table 1.7 explains ANOVA results between solid waste affects health condition and effects related to poor solid waste mismanagement. The sum of square value between groups and within groups is 372.638 and 5324.544. The degrees of freedom value between groups and within groups 4 and 469 respectively. The F value is 8.206.

There is a statistical significant between the above two variables. The result shows that the significant p value is 0.000 which below 0.05. Therefore there is a statistical significant difference between solid waste affects health condition and effects related to poor solid waste mismanagement determined by one way ANOVA. F value 8.206, mean square value 93.159.

Findings

The following are some of the specific findings in this project work.

- Majority 40 percent of the respondents are belong to kitchen waste, vegetables, flowers, leaves, fruits, 24 percent of the respondents are belong to all the above and 20 percent of the respondents are belong to paper, glass, metals, plastics and remaining 16 percent of the respondents are belong to old medicines, chemicals, bulb, batteries, shoe polish, spray cans.
- Majority 60 percent of the respondents have the composition of solid waste per week is above 1 kg, 30 percent of the respondents have the composition of solid waste per week is less than 500 gms and remaining 10 percent of the respondents have the composition of solid waste per week is 500 gms – 1 kg.
- Majority 50 percent of the respondents have the composition of solid waste is less than 4kg, 30 percent of the respondents have the composition of solid waste is 4 kg – 8 kg and remaining 20 percent of the respondents have the composition of solid waste is above 8 kg.
- The linear regression analysis between prevailing solid waste generated and composition of solid waste per month. The relationship is significant at 5% level. So, prevailing solid waste has significant impact on composition of solid waste per month.
- Majority 30 percent of the respondents are affected by proliferation of flies and mosquitoes, 24 percent of the respondents are affected by bad odor and infection, 20 percent of the respondents are affected by skin problem, 16 percent of the respondents are affected by common cold and cough and remaining 10 percent of the respondents are affected by risks and injury.
- Majority 30 percent of the respondents are affected by viral fever, 20 percent of the respondents are affected by dengue fever, 18 percent of the respondents are affected by common cold and cough, 14 percent of the respondents are affected by common fever, 8 percent of the respondents are affected by cholera, 6 percent of the respondents are affected by malaria and remaining another 4 percent of the respondents are affected by cancer.
- One way ANOVA between solid waste affects the health condition and effects related to poor solid waste mismanagement. The result shows that the significant p value is 0.000 which below 0.05. Therefore there is a statistical significant difference between solid waste affects health condition and effects related to poor solid waste mismanagement determined by one way ANOVA.

Suggestions

- Proper Solid Waste management have to the undertaken to ensure that is does not affect the environment and not cause health hazards to the people lining there.
- Generation of waste should be decreased.
- Material recycling and recovery should be increased.
- Municipalities increasing their level of service to the public regarding sorting of waste.

Conclusion

The focus of the study was an impact of solid waste. That is not properly managed, especially excreta and other liquid and solid waste from households and the community, are a serious health hazard and lead to the spread of infectious diseases.

Reference

1. M. Balasubramanian and V. DhulasiBirundha., (2012), An Economic Analysis of Solid Waste Management in Madurai District, Tamil Nadu, Applied Journal of Hygiene 1(1) : 01-07, 2012, ISSN 2309-8910.
2. <https://encoursesonline.iasri.res.in>
3. Pervez Alam & Kafeel Ahmade., (2012), “Impact Of Solid Waste On Health And The Environment”, Special Issue of International Journal of Sustainable Development and Green Economics (USDGE), ISSO No : 23154721, V-2, I-1, 2, 2013.