



## REVIEW OF RESEARCH

ISSN: 2249-894X

IMPACT FACTOR : 5.2331(UIF)

VOLUME - 7 | ISSUE - 5 | FEBRUARY - 2018



---

### PROBLEMS OF SOLID WASTE, ITS ENVIRONMENTAL IMPACT AND MANAGEMENT IN MALDA-ENGLISHBAZAR MUNICIPAL TOWNSHIP AREA OF WEST BENGAL: A GEOGRAPHICAL ASSESSMENT

**Parvati Rai**

**Asstt. Teacher of Geography , St. Mary's School, Malda, West Bengal.**

#### ABSTRACT

*Issues of solid waste and its management are emerging serious civic problems in the rapidly growing towns and cities particularly in the developing countries due to uncontrolled rise of population through the years. With increasing population and rapid extension of the township area without developing required infrastructural facilities the problem of solid waste management becomes intensified in the townships. Open dumping and irregular collection of solid wastes pose a serious threat to the environment as well as to the people living within the towns and cities. In Malda township area of West Bengal poor solid waste management practices and irresponsible behaviour of the urban dwellers are appear to be the major threats of environmental pollution and health of the city dwellers. This paper attempts to bring out the present scenario of the extent of environmental pollution being caused due to solid wastes in the Malda Municipal area as it is arising and growing day by day due to uncontrolled and unauthorized waste dumping, the present system of its removal and management, and suggests some remedial measures.*

**KEY WORDS:** *Solid waste, infrastructural, intensified, waste management, environmental pollution .*

#### INTRODUCTION

Municipal Solid Waste (MSW) comprises waste from households, construction and demolition debris (CnD), sanitation residue, and waste from streets, generated mainly from residential and commercial complexes. It is an established fact that solid wastes in municipal township areas cause potential health risk (Cardozo *et.al.* 2015). Large municipal administrative bodies of this country have now been thinking seriously how to negotiate the problem of solid wastes in properly planned manner (Ray, 2015). In India management and disposal solid wastes in the rapidly growing urban areas have posed serious challenges (Joshi and Ahmed, 2016). Solid Waste Management system involves activities associated with generation, collection, transfer, transport and the processing and disposal of solid wastes generated by the community. It involves



planning, organization, administration and finance, legal and engineering aspects. These aspects have received little attention in most of the municipal towns resulting in unsanitary conditions (Tchobanaglou, G. *et al.*, 1997). Pokhrel and Viraraghavan (2005) are of the opinion that the absence of legislation and inadequate financial resources limit the safe disposal of waste in well equipped and engineered landfills. Lack of knowledge of treatment systems by authorities is regarded as a factor affecting the treatment of waste (Chung and Lo, 2008).

Solid Waste generated in Malda-Englishbazar Municipal area of West Bengal consists of biodegradable wastes generated from vegetable market, fish market etc and non- biodegradable wastes consists of plastics, thermocol, non-clinical wastes, electronic wastes, demolition debris generated from the household, residential and commercial complexes. In order to maintain the quality of environment proper management of solid waste has now become essential. Management of Municipal Waste in this municipal township is going through a critical phase, due to unavailability of suitable facilities to treat and dispose the large amount of solid waste generated daily in urban areas. This paper is an evaluation and assessment of problem of solid waste, its environmental impact and management in Maldah municipal township area of West Bengal.

**OBJECTIVES OF THE STUDY**

The main objective of this study is to investigate upon the core issues related to the solid waste generation, its impact on the environment of the Malda Englishbazar Municipal township area and propose for its sustainable management. It also attempts to find the nature and the type of solid waste generated as well as the sources of solid waste generation. The study also seeks to find some remedial measures for combating the problem of solid waste management. Negative environmental impacts and the related health hazards due to defective management process of solid waste are also to be examined.

**GEOGRAPHICAL IDENTITY OF THE STUDY AREA**

Malda town, the district head quarter of Malda district of West Bengal, covers an area of 3,733km<sup>2</sup> with a total population of 39, 97,970 according to 2011 census. It is one of the fast growing towns in West Bengal. Its population growth rate over the decade of 2001-2011 was 21.5%. English bazaar municipality is the administrative authority of Malda town of Malda district of West Bengal. The authority is responsible for the development, maintenance works, and collection of solid wastes from different wards under its jurisdictions and revenue collection. The authority gets its fund mainly from the state government. The other agencies like PWD, Post and Telegraph, Telephone exchange etc also works for the development and maintenance of this town in their respective field.

As per the information received from the municipal office a classification on nature, types and sources of solid wastes has been made and the result is presented in the table below. Nature and type of Solid Waste Materials as well as the major sources of Solid Waste generation in Malda town has been listed in the following table.

**Table 1: Nature, types and the sources of wastes generation in Malda Town**

Nature	Types	Sources
Organic or biodegradable wastes	Vegetables wastes, fish wastes, food and kitchen wastes from hotels and households etc	Vegetable market, fish market, hotels and residential areas etc
Non biodegradable wastes	This includes plastics, chemicals, spray cans, non clinical wastes etc.	Commercial buildings, stores, shops, residential areas, hospitals and nursing homes, matrisadan(municipal health centers etc
Inert wastes	Construction and demolition wastes, rocks, debris, drain sludge etc.	Repairment of old buildings, construction sites, drains etc

*Source: Municipality office, Malda*

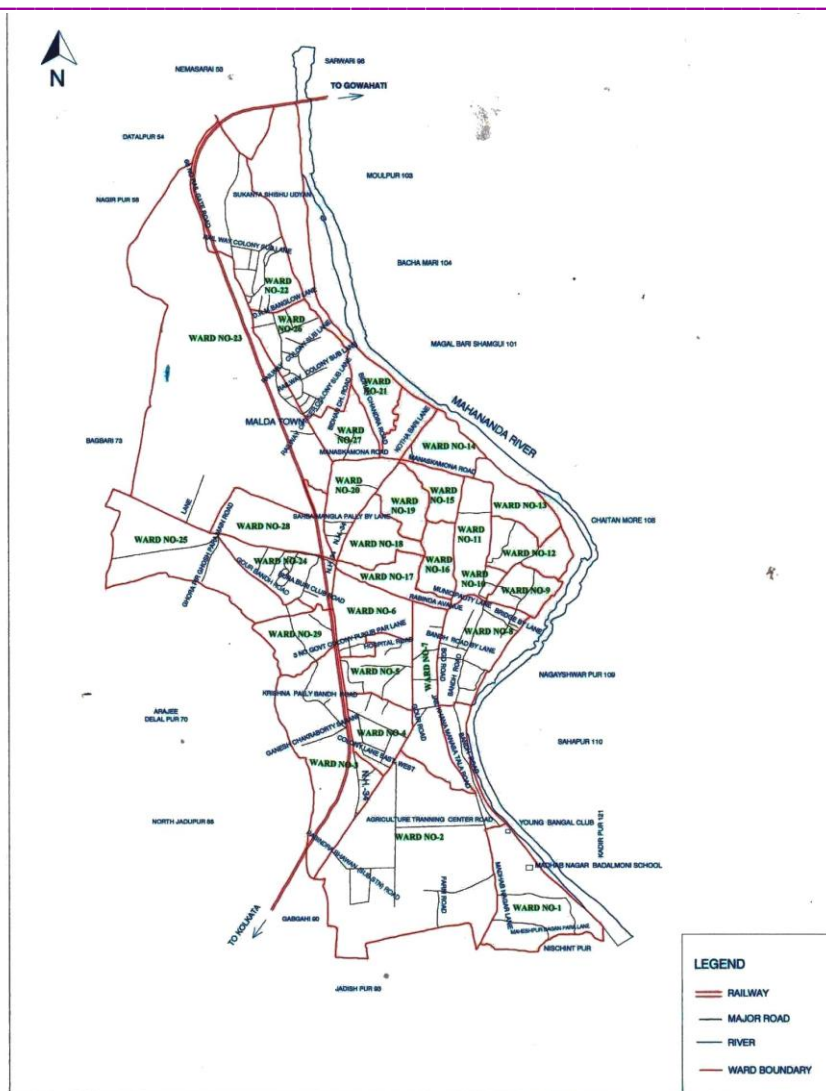


Figure 1: Malda Englishbazar Municipal area

**PATTERN OF WASTE GENERATION**

Malda town is under the administrative jurisdiction of English Bazaar Municipality, Malda. The territory of English Bazaar Municipality has been divided into 29 municipal wards. As per 2011 census, Malda town generates around 190 metric tons of solid waste per day. Major sources of municipal solid waste in English Bazaar municipality are residential areas, commercial and market areas and others. The proportions of solid waste generated by various sources in Malda English Bazaar Municipality area is presented in table and the diagram below.

**Table 2: Proportions of solid waste generated by various sources in Malda English Bazaar Municipality area**

Sl. No.	Sources	Quantity (in Metric tons)	%
1.	Residential areas	80	42.1
2.	Markets	60	31.6
3.	Hospitals	35	18.4

Source: Municipality office, Malda

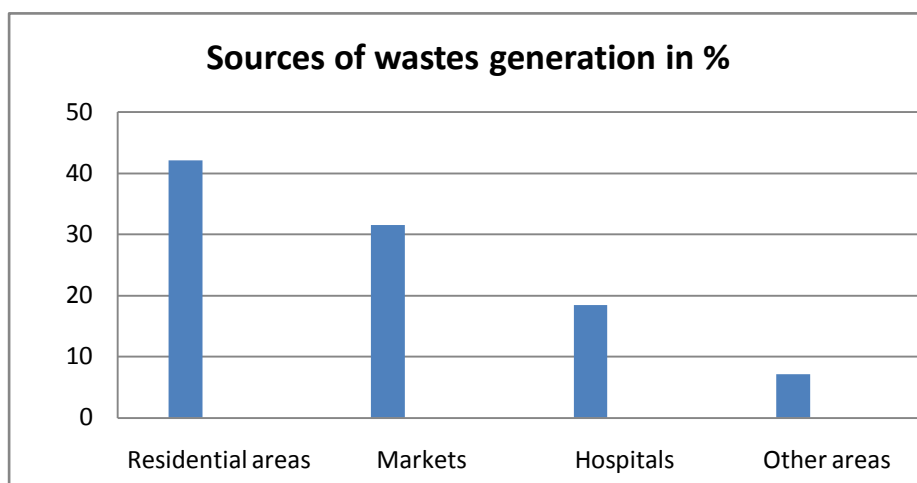


Figure 2: Sources of wastes generation from Malda Englishbazar Municipal area

**PATTERN OF SOLID WASTE COLLECTION IN THE MUNICIPAL AREA**

The amount of waste generated has an obvious relationship with the volume of population living in the city. Within a decade (2001-2011) a total of 7,07,810 population has been added in this city and as a consequence it has led to increased generation of solid wastes. The tasks of solid waste disposal and management are now carried out in the following manner:

- 1) Collection of garbage from the household, markets, hospitals and offices etc using hand pulled vehicles.
- 2) The collected garbage are then brought to the main garbage collection points which are located at various corners within the town.
- 3) These heaps of wastes are being loaded in municipal vehicles to be transported in the outskirts areas for disposal.

At present open dumping is the only option that is used for the management of solid wastes by the municipality. The municipal solid wastes are stored in the wastes containers (trailers) and are not sorted at the source before disposal. According to the information received from the municipal office the total number of workers involved in managing solid wastes in this municipality are 640 in total and the total number of vehicles engaged in collecting garbage at present are 12 with 6 workers for each vehicle. Each vehicle makes two trips per day to collect wastes from the garbage collecting points located at different corners in the town. Each vehicle has a capacity of lifting 90 cubic feet solid waste at a time which means one vehicle collects 18 cubic feet wastes each day for the disposal.

**Solid waste collection points in the municipal area**

Important solid waste collection points in the Malda Englishbazar Municipal area as have been identified are:

- 1) Near the AC Institution, 2) Opposite Sunrise Club, 3) Near BS Road Durgamandir, 4) Beside Arabinda Park, 5) Station Road near the Electricity Office and 6) Bandh Road near East Blaze Nursing Home.

**Environmental Problems caused by poor management of solid wastes in the area**

Increase of population directly aggravate demand for food and other essentials and due to increased consumptions of such essentials there has been a sharp rise in the amount of waste generated daily from different sources. Inappropriate handling and mismanagement of solid wastes disposal cause pollution in land, water and air. This is a certain fact in the case of Malda.

Open dumping ground practices adopted by English Bazaar Municipality have seriously affected the surrounding areas. Due to such dumping the location becomes a breeding ground for mosquitoes, harboring

diseases, inviting stray animals and emitting unpleasant odors. The contaminations of various harmful wastes have made the land toxic. Nearby surface water resources as well as ground water resources are also being polluted which makes them unfit for drinking resulting into serious water crisis in the locality. Other problems associated with open dumping is the release of significant amount of green houses gases into the atmosphere. Such compounds include carbon dioxide and methane making up 90% of gases, remaining 10% includes nitrogen, oxygen, ammonia, sulfides, hydrogen and various other gases. These gases are produced when bacteria break down organic wastes. Though the municipality collects wastes more than once a day almost on regular basis, the amount of waste collected is so enormous that the lifting containers are often over spilled. Moreover littering by residents after collection and untimely collection of wastes by municipal workers makes heaps of garbage visible in several parts of the town destroying its aesthetic beauty. Also an important fact is that wastes are not segregated either at the source or before disposal. The authorities have partially failed in implementing the mandates and regulation to maintain the environment.

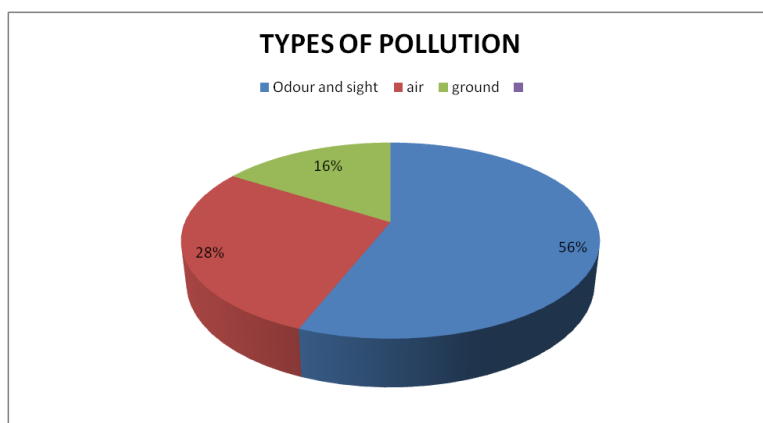
**Perceptions of the residents on the types of pollution problems through solid wastes**

On the basis of the perceptions of the respondents’ major problem faced at large are air pollution, odour pollution and visual pollution. Also the accumulation of heaps and their untimely disposal is largely responsible for the origin of bacteria, fungi, flies, mosquitoes and the associated diseases. During the rainy season the problem aggravates when wastes is not collected at timely intervals and it spreads over roads and drains by rainwater blocking the channels resulting into water stagnancy and associate health hazard among the local residents. The following table and the diagram prepared upon it present the views of the residents on the types of pollution as they suffer from the unscientific and unsystematic dumping of solid wastes.

**Table 3: Perceptions of the residents on types of pollution through solid waste**

*Sample size: 50 people*

Types of pollution	Number of respondents	Percentage (%)
Odour and sight	28	56
Air pollution	14	28
Ground pollution	8	16
Total	50	100



**Figure 3: Types of Pollution**

**Types of health hazards suffered by the municipal workers engaged in waste disposal**

The workers employed by the municipal authority for waste clearance and disposal are found to have direct health risks and this is due to lack of safe handling of wastes. No proper protective masks or

apron are provided to the workers by the authority. There is also no provision for any health insurance. Moreover long working hours and manual scavenging add plights to the workers.

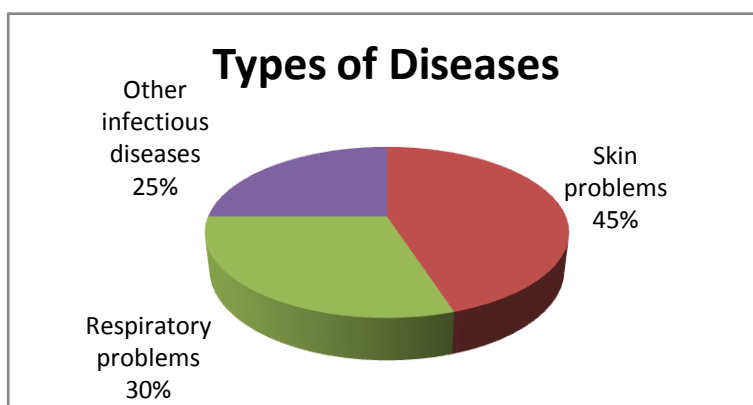
On the basis of direct interview with the workers the morbidity like respiratory diseases, eye diseases and injury, dermatological problems, musculoskeletal and nail infections were reported high among municipal solid wastes handlers. Measures are needed to improve the work environment of waste handlers by ensuring availability of protective gears based on ergonomic principles, clean drinking water and washing and sanitation facilities during working hours. A survey on this aspect was conducted in the field by using questionnaires and a report is presented below in the table and the related diagram.

**Table 4: Health problems suffered by wastes handlers of English bazaar Municipality**

*Sample size: 20 workers*

Diseases	Number of respondents	Percentage (%)
Skin problems	9	45
Respiratory problems	6	30
Other infectious diseases	5	25
Total no. of respondents	20	100

*Source: Data generated through field survey*



**Fig 4: Types of Diseases suffered by the municipal workers**

From the above diagram it is obvious that the major proportion of the workers (42%) suffer from skin problems. A formidable proportion of them suffer from respiratory problems (30%) and the remaining (20%) from other infectious diseases.



**Plate 1: Workers collecting solid wastes from the residential area**

### The existing pattern of municipal solid waste collection and disposal and overall assessment

Under the present projects for municipal solid waste management the sets of equipment are being used. They are a total of 12 collecting vehicles for transportation of wastes, 2 movable compactors for compressing of wastes materials, 2 JCP for dressing the collection of solid wastes, 2 Cesspool emptier to collect the night soil and a number of trailers and handcarts are in operation for the task of solid waste management. The workers of English Bazaar Municipality do not collect clinical wastes from the town. For the collection of these wastes from hospitals, nursing home, Matri sadan etc. Green Zen Bio Vat from Jalpaiguri arrives everyday to collect these which is then treated in Green Zen Bio Vat plant located at Jalpaiguri.

There still exists the problem of any proper dumping ground for the municipal solid wastes. Till date there is no proper dumping ground or landfill used by English Bazaar Municipality for disposal of solid wastes. The accumulated solid wastes are dumped either near the roadsides outside the municipal area or in the areas of low land and depressions. In order to solve this crisis, the municipal authority has purchased a piece of land for accommodating dumping site at Kanchantar Khasimari, 10 km away from the main town. The total area of new dumping site is 10 acres and the work of fencing and electrification is now in progress. The authority expects that the problem of open dumping will be solved in near future and a scientific dumping system of solid waste will begin. The main aim of the project is to convert wastes into wealth by recycling through adaptation of engineering and scientific methods and techniques. The concept of 'Waste to Wealth' literally means moving wastes from a platform of exhausted utility to valuable and desirable level. For conversion of wastes into wealth, at first the segregation of wastes at the source is required so that the organic wastes can be converted into compost and the rest can be used for making pellets and plastic granules etc.

### ACKNOWLEDGEMENT:

The author is grateful to Prof. G.P. Chattopadhyay of Visva-Bharat, Santiniketan for his valuable comments and editorial advice on the manuscript of this paper. The municipal authority of Englishbazar (Malda) also rendered their generous help for which the author remains indebted.

### REFERENCES

- Cardozo, C, Manuelle & Missias-Moreira, R. (2015): Potential health risks of waste pickers. *O Mundo da Saúde*. 39: 370-376.
- Joshi, R. and Ahmed, S. (2016): Status and challenges of municipal solid waste management in India: A review. *Cogent Environmental Science*, 2(1).
- Pokhrel, D, and Viraraghavan T. (2005): Municipal Solid Waste Management in Nepal: Practices and Challenges, *Waste Management* 25(5): 555-562.
- Ray S. (2015): KMC eyes more compactors to fight filth. Retrived from <https://timesofindia.indiatimes.com/city/kolkata/KMC-eyes-more-compactors-to-fight-filth/articleshow/47020569.cms>.
- Tchobanoglous, G, Theisen, H. and Vigil S. (1993): *Integrated solid waste management – Engineering Principles and Management Issues*, MC Graw-Hill, New York.



**Parvati Rai**

Asstt. Teacher of Geography , St. Mary's School, Malda, West Bengal.