



ASSESSMENT FOR THE SOURCES OF SOLID WASTE A CASE STUDY OF JALANDHAR

Deepak Mehta*

Research scholar, Jiwaji University, Gwalior, Madhya Pradesh.
*Corresponding Author

Dr. Atindra Singh Tomar

Professor and Head Department of Geography, Dr. Bhagwat sahai Government College, Gwalior, Madhya Pradesh.

ABSTRACT

The unwanted substance released after fulfilling their need is known as solid waste. Every country suffers from the problem of solid waste. Urbanization and increasing population lead to increased amount of solid waste. There is an urgent need to handle this problem worldwide, especially in a developing country like India. Jalandhar is one of the important urban centre of Punjab with more than 8 lakh population. The whole city has been divided into various wards. There are about 500 tons of solid waste generated per day in the city. Municipal Corporation of Jalandhar is responsible to handle solid waste of the city. There is an urgent need to find the solution of Solid waste. To make effective planning for segregation of waste at the birth place of solid waste. It is pertinent to aware the localities about solid waste because more than 40% of the waste comes from houses. The local government should take the initiative to involve private sector, People participation, N.G.O.'s and use other technological innovations for fighting with this menace at initial stage of generation. These are some techniques which can help us to make future more secure and better living condition in the city.

KEYWORDS :

STUDY AREA

Jalandhar is one of the important urban centres of Punjab. It is situated in Doaba region. The latitudinal and longitudinal extent of Jalandhar is 31° 32'N and 75° 57'E respectively. The city has flourished at a very fast rate.

Historically during the Mughal period open drain system was there along the roads. Mohallas were developed during this period. In British period planning had been executed to make city more beautiful. Many plans were started for residential and commercial areas. Even sewerage system also got thrust in this period. The connectivity through railway lines with rest of states and cities was developed. Before independence it had already grown up 12 Kots, 12 Basties and 12 Gates which marked with population of Hindus in Kots and Basties for Muslims and gates are in and out passes of the city.

Now a days Jalandhar is on global map, for its Sports and Handtool industry not only in India but also in the world. Kapurthala, Nawanshahr, Hoshiarpur and Ludhiana districts are the neighbourhood of Jalandhar district.

The Punjab Municipal Corporation Act was passed in 1976. The first municipal election was held in 1991 for the formation of Municipal Corporation in Jalandhar. According to census 2011 the total population of the city was 8,62,886 persons of which 457636 are males and 405250 females. The sex-ratio and literacy rate was 915 and 82% respectively.

The Jalandhar city has humid subtropical climate with cold winter and warm summers. Summer season extends from the month of April to June and winter season extends from November to February. The average annual precipitation is 70 cm. Maximum rainfall is confined to month of July and August so there is high humidity during this period. Silver oak, sheesham and eucalyptus etc. are the major species of tree existing in the city.

- Population: 8,62,866
- Area: 110 Sq. Km
- City divided into Zones: 04 Zones
- Total no. of households: 1,73,917
- Estimated garbage generation: 500 MTD

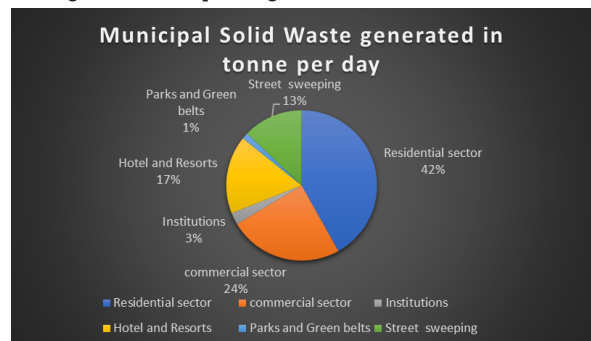
Sources Of Solid Waste In Jalandhar City.

Jalandhar is among the cities selected for smart city category by ministry of transport in year 2019. The municipal

corporation of Jalandhar handling solid waste of the city. The city is divided into different wards.

The sources of municipal solid waste generation are residential sector, commercial sector, institutions, Hotel and resorts, Parks and green belts and street sweeping.

The percentage of municipal solid waste generation is different from sector to sector. The share of residential sector in waste generation is quite higher than another sectors.



Residential Sector-

It is popularly known for domestic sector. The waste generated by residential or household sector is maximum biodegradable in nature. The Household waste is also in the form of dry and wet waste. The quantity of household waste is 212 tonne per day which is 42% of the total waste of the city. The share of biodegradable waste like kitchen waste, paper, clothes, wood etc. are more in quantity. Some of the hazardous waste like broken tube light, Paint drums, pesticides bottles etc. are generating from domestic sector mix with biodegradable waste.

It is one of the biggest challenge for municipal worker to handle a little amount of hazardous waste with non hazardous waste. The residents of the city are not much aware about the importance of segregation of waste. In majority of wards of the city the residents uses common dustbin for household waste.

The residential waste generation varies from locality to locality. It has been seen that more advanced colonies generate more residential waste as compared to the colonies having people of weaker section of society.

Commercial Sector-

Jalandhar city is a hub of hand tool and sports goods industries. It mainly located in *Focal Point, leather surgical complex, Basti Bawa Khel and Basti Sheikh*. The waste of commercial sites also gets mixed with residential areas. Every ward of the city comprises of residential zone with shops and various types of industry like cottage and small scale industries. Jalandhar is one of the oldest cities in the state. The land use plan is so intertwined with different human activities. The old city connected by roads from all sides like *Patel chowk to Adda Hoshiarpur* this road further extends upto *Bhagat singh chowk than Jyoti chowk* in the end it linked up with Patel chowk. Residential area mixed with commercial sites along all the major roads of the city. These roads covered the various localities of the city like *Valmiki gate, Maihiraan gate, Quilla mohalla, Panj peer, Attari Bazar, Pucca bagh, Saidhan gate, Ali Mohalla* etc. Many times in this zone the commercial waste mixed with household waste. The other centres of commercial activities in the city are urban estate, railway station, Bus stand, Doaba chowk kishanpur, Gopal Nagar, Model house, Mithapur road etc. The commercial waste comprises of manufacturing waste, toxic material and packing material, paper, plastic, broken glass, discarded material and hazardous waste. The total waste generation through commercial zone is 124 metric tonne per day. The total waste is collecting with segregation at the primary sources. This is major concern for local authority to combat with this situation for handling solid waste.

Institutional Sector –

Educational institutions and hospitals fall under this category. This sector of the city generate both Bio-degradable and Bio-degradable waste. This sector contributes 13 metric tons of solid waste per day. The bio-medical waste generated by healthcare institution not included under this category. Bio-medical waste is not the part of Municipal solid waste. As per norms biomedical waste in the state collected under CBTWs. The share of bio medical waste is quite high in the city. Many clinics and health Centre dumped their bio-medical waste into municipal solid waste without any sorting of waste.

(I)Educational institutions- Jalandhar city is an important centre of education in the state of Punjab. Many students from various villages and towns are studying in the institutions located in the city. The institutions comprise of both schools and institute of higher education. There are more than 100 schools in the city. Many of them are affiliated to various boards like CBSE, PSEB and ICSE. There are many play-way, kinder garten and primary schools which make the child creative, confident, and develop the ability to perform well in future. The basic objective of these institutions are to inculcate human values in students. These schools teach thousands of students every day. They also generated solid waste like papers, cardboards, food waste, chemical solutions, discarded equipment, wood and organic and inorganic waste.

(II) Hospital Sector:- Jalandhar is a hub of Healthcare Centre in India. There are approximately 800 Health Care Centres including hospitals, clinics and Nursing homes. These Health Care Centres serve Medical Services not only to the people of Punjab but also neighboring states of Punjab. Doaba region is a Non-resident belt. Medical tourism industry also flourished in the city. As an NRI Belt people from different countries visiting and treat their major health problem in local health centres. Jalandhar city got the status of highest health centre city in Asia. These health centres generate large amount of solid waste in the form of biomedical waste. The major share in Biomedical Waste in the form of infected syringes, glass, plastic, discarded equipment's and instruments cotton, swabs etc. The segregation of the waste is done at primary sources. The bio-medical waste is not included in municipal solid

waste but it is collected under CBWTFs. Many Super-specialty hospitals are providing services in the field of neuro, nephrology, eye care and cardiology etc.

Most of the hospitals are developed along the major roads of the city like *Workshop chowk to Nakodar chowk than upto BMC chowk*. There are 21 hospitals located between *workshop chowk to BMC Chowk*. Many small clinics provided services in the walled city area where number of mohallas are there. They are having narrow roads with mix landuse plan. Most of these clinics don't segregate the waste and dump it into the municipal solid waste. They do not follow the rules and regulations managing bio medical waste.

Hotels And Resorts-

This sector is one third major contributor of solid waste in the city. They are generating 85 metric tonne of solid waste per day. The type of waste generated by this sector are organic waste, hazardous waste, recyclable waste and soiled waste.

S.No	Category of waste	Type of waste
1	Organic waste	Food Stuff waste like vegetables, fruits, beverages etc.
2	Hazardous waste	Spray, chemical cans, discarded tube lights, CFL, old medicine, discarded Batteries
3	Recyclable waste	Plastic, paper, glass, metals , concrete etc.
4	Soiled waste	Dust and Dusty clothes

This industry brings out major source of revenue for government. It creates job opportunities in the city. Jalandhar is an important business centre of Punjab. Many foreign exporters and importers visiting in the city for their business tour. Medical tourism also provide boost to this sector as there are number of super speciality and international standard hospitals are present in the city. Hotel receiving good response from foreign visitors, intra state and inter state visitors. It provides regular 24 hours service throughout year. There are 184 hotels and dhabas which are registered in the city. The resorts are quite less in number as they require large area for establishment. They are used for various functions, entertainment and recreation activities. They also generate solid waste but amount of waste is quite less as compared to hotel industry. The maximum number of hotel and dhabas established nearby bus stand and railway station. The roads connect Bus stand with railway station having maximum number of hotels and dhabas. As there is shortage of land in the city many new hotels are established on the roads which radiate to different cities from bus stand. One of the examples is road that connects bus stand to PAP Chowk.

Parks And Green Belts Waste-

Green belts and parks are one of the important attributes of the urbanization. The urban planners giving more thrust on the development of parks and green belts in the urban areas. These act as a purifier for the cities. The overcrowding, burning of fossil fuels, traffic jam etc. are responsible for increasing the amount of greenhouses gases in the air. These areas help to combat with air pollution of the cities. It increases the oxygen level in the air. It is very important for every urban area to make some area reserve for parks and open spaces. These recreational and landscaping makes the city aesthetic more sound.

There are more than 400 parks including green belts are present in Jalandhar. The total waste generate under this category is 7 metric tonne per day. Most of the parks like Adarsh Nagar park, Charanjit Pura park and Dr. B.R. Ambedkar park are well maintained by the local administration with help of Local residents and N.G.O. The local residents used the parks for morning walk, exercise,

yoga session, evening walks and children used to play and to take swings installed in parks. Green Belt cover only 3 to 4 percent area of the city. As per norms 10% area is required for the same. The green belts are developed outside the walled city area. Few belts are maintained like Green belt near St. Joseph convent school, cant. Road. Most of the belts are not properly maintained. The ineffective planning also leads to decreasing the area under life saving green belts.

The solid waste generated from these parks and green belts consists of leaves, branches, plastic, wrapper and paper etc. majority of waste is a biodegradable. The share of horticulture waste quite high in these areas. There are few composting sites developed in the parks or nearby area. where the composting of waste is done. The majority waste is dumped in municipal solid waste.

Street Sweeping–

There are 1500 sweepers who assigned work of street sweeping in different wards of the city. Each worker got a specific limit for clean the roads and streets. They perform a duty for seven hours a day. They collect the waste after sweeping the roads and streets. They accumulate the waste on the sides of streets and roads. They develop small mounds of waste in the form of patches on both sides roads and streets. They do not segregate the waste. they focusing quartine the waste in specific area. The waste generated in these sites are waste throw by passengers, Leaves, littering by pedestrians, Dust, Rubbish items etc. They generate 65 metric ton waste per day through street sweeping.

Recently the sweeping machines are hired by municipal corporation on rental basis. It is used in different localities of the city like road towards Devi Talab Mandir. The experiment was not successful. It is difficult for sweeping machine operation in most of the wards specially walled city area where most of the roads are quite narrow. In addition to that sanitation worker union also not does not favour this project, as they cutoff the jobs of Safai workers in the city.

CONCLUSION

The amount of solid waste produce increases everyday. There is no provision of segregation of solid waste in source points of the city. All sectors dump the waste in mixed form. They believe that it is responsibility of municipal corporation to segregate and dispose of the waste. They do not understand the importance of its segregation at their end. There is an urgent need to sensitize the local residents about segregation of dry and wet waste. Most of the waste comes from residential zone of the city. There is an urgent need to create mass awareness programmes through street plays, rallies with ply cards with motivation slogans in all wards of the city. Various competitions related to segregation and management of solid waste should be organized in various educational institution, helps to create mass awareness to the residents. It means educating one child means educating the whole family. No doubt many healthcare centres are doing segregation of biomedical waste, setting a good example to others. Government should also impose fine in various sectors who break rules and regulation in segregation of waste. The role of Non-government organization also use with full potential in this field. We should also help from means of mass communication like print media, television, radio etc. to make the city free from this problem.

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