

# STUDY OF SOLID WASTE GENERATION AND ITS IMPACTS ON ENVIRONMENT—AN ANALYSIS OF SEONI CITY

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**ABSTRACT :-** The natural reserves of the Planet are not enough now to support human demands and economic activities. Global warming has demonstrated the risk of overstepping the ability of the Planet to consume our waste goods. At present population is increasing at alarming rate and the pressure of population is increasing day by day on resources. Urbanization and industrialization increased the problem of environmental degradation and also created the problem of solid waste. Due to increase the facilities the rate of solid waste generation is increasing day by day. Residential areas, households, hospitals, institutions, hotel and restaurants, marriage halls, daily markets, fruits and vegetables markets, construction and demolish works of buildings etc. are the main sources of solid waste generation. Food culture, life style, dress and works etc. are changing day by day. Packets foods, junk foods, snacks and soft drinks are taking place of the rice, roti, dal, sabji, mattha, dahi etc. These packets foods and junk foods are increasing the problem of solid waste. Every household is generating the solid waste in a huge amount due to changing life style and increased the income. Medical facilities are generating hazardous and non-hazardous solid waste. The amount of undegradable solid waste is increasing rapidly. Due to increasing the amount of solid waste in urban areas the problem of environmental degradation is increasing. Water pollution, air pollution, loss of green belt is the result of solid waste generation. In this paper the main focus is on municipal solid waste. Various methods have been described to manage the solid waste from organic compost making to energy generation.

**KEYWORDS:** Solid Waste Generation, health effects, landfilling, land degradation, waste management, storage and handling, recycling, risk exposure.

## INTRODUCTION:-

The waste is Gold if it is properly held." It is known that the waste which is thrown away can be used in many different ways. This paper deals with the solid waste management methods and practices in India. The solid waste management consists of various types of wastes like industrial, agricultural, transport, municipal etc. Although all types of wastes are harmful but municipal solid waste 'now known as Solid Waste' is the type of waste which can be managed properly without causing any pollution and harm to other species.

Solid waste is a useless or unwanted materials which is discarded from the society. Solid waste is also known as garbage which is generated from the residential areas, industries, institutions, markets etc. consumption behaviour and housing structure influence the waste composition. There are present a lot of factors which led to the increase in waste such as rapid population growth, urbanization, industrialization and economic development are the main factors. Due to increasing the urban population the expansion of the city is increasing and encroachment of the rural areas by the urbanization. The green belt which was presented between rural and urban fringe has been reduced due to expansion of the city. Built-up area is increasing day by day due to population growth. Due to develop the settlements the number of houses are increasing and the rate of generation of the solid waste is increasing in the study area. Socio-economic facilities are increasing to fulfill the requirement of the population. So the rate of solid waste generation is increased in urban areas. Households, industries, hospitals, hotel and restaurants, fruits and vegetables markets and construction works are the main sources of solid waste generation at present. A heap of solid waste is not only increasing outside of the city but also taking place inside the city in a small size of heap of solid waste. It is effecting the environment and reducing the air and water quality.

Poor waste management system is responsible to increase the environmental problems in developing country. Due to poor waste management system the human health is effected by the solid waste generation. Cholera, malaria, respiratory problems, lungs problems etc. is the result of increasing solid waste in the developing countries. Life style and food culture is taking place of western culture in India. So the rate of generation of solid waste is increasing day by day. Very few countries have facilities about the solid waste management. So the heaps of solid waste are going up day by day. Public and private sectors both are not fulfill the requirement of the solid waste management. They have poor waste management systems. So the problems are increasing by the solid waste generation.

#### **OBJECTIVE OF THE STUDY:-**

To complete the present study the researcher has selected the following objectives–

- To analyse the sources of solid waste generation in the study area.
- To analyse the impacts of solid waste generation on environment in the study area.
- To prepare a planning for solid waste management of the study area.

#### **REVIEW OF LITERATURE:-**

To complete the present research paper the researcher has studied various thesis, projects and research papers of the Indian and foreigner scholars. The researcher has made an attempt to arrange the literature related to the research problem. Which is given as– Mufeel, Kafeel, Gauhar and Trivedi (2008) presented a research paper on “Municipal solid waste management in Indian cities – A review.” They analysed the sources of municipal solid waste generation and the collection methods of solid waste in India cities. They found that these cities have poor solid waste management techniques. These cities are suffering from the over population growth and high rate of solid waste generation. Due to poor management of solid waste environmental problems are increasing and effecting the human health. Kaushal and Chakraborty (2012) presented a research paper on “Municipal solid waste management in India – current state and future challenges – A review.” They analysed about the current status of solid waste generation and the future of this solid waste. They pointed the future

challenges related to the waste generation and also analysed about the impact of solid waste on environment and human health. They compared about the generation of solid waste and the population growth. Parvez and Kafeel (2013) presented a research paper on “Impact of solid waste on health and the environment.” They focused on impact of solid waste environment and human health. Due to lack of technology and use of non-scientific method of disposal the rate of solid waste generation is increasing in the developing countries. They found that proper management system is not developed here to reduce, reuse and recycling the solid waste. Due to untreated solid and liquid waste generated a lot of diseases here. Air pollution, water pollution and soil pollution are present here. Francis and Singh (2013) analysed about the waste composition quantity plastics 20%, polythene 13%, paper 22%, glass 6%, metals 5% and others 34% in solid waste in the study area. They analysed that high income group is 17% of the total population and generate rate of per capita 797 gram per day, middle income group is 38% of the total population and solid waste generation rate is found 560 gram per day per capita and low income group is 30% of the total population and waste generation is found 200 gram per capita per day and slum population is 15% of the total population the rate of generation of solid waste is found 200 gram per capita per day in the study area. Agarwal (2017) presented a research paper on “Solid waste management in Indore city–A review.” In this paper they analysed about the sources of solid waste and methods of its treatment. They focused on the practical problem of separating the different disposal waste and their effects. They discussed about the solid waste collection, transportation and disposal. They created modern disposal techniques of solid waste for the eco-friendly. Kanchan (2018) presented a research paper on “Solid waste management in India.” She analysed about the municipal solid waste generation rates in different urban centers in India, changing lifestyle of the Indian population and population growth. She analysed that the quantity of the municipal solid waste is increasing at a faster rate and also the composition is changing. She discussed that different types of composition is increasing in the solid waste generation. Due to change the life style foods, paper, polythene, glass, bottles, plastics, peels of vegetables and fruits etc. an increasing day by day. Chaudhary (2019) presented a research

paper on solid waste management. She analysed that various types of solid waste management techniques are present to reduce the level of solid waste generation at present. Mostly foods, vegetables, papers, clothes, wood, glass, polythene, metals, plastics are contained in the solid waste. These wastage is increasing day by day due to increasing the population and lack of treatment of the solid waste. She observed that very poor technology is present in developing countries to reduce the level of solid waste generation. Mohammad, Jha and Kumar (2020) completed their research paper on “Municipal solid waste management and its impact: a review.” They analysed that overpopulation and lack of solid waste management technology are the major causes of solid waste generation. They focused on the management of municipal solid waste and its health and environmental issues. They observed many negative impacts on environment and human health. They observed that the need for proper disposal of waste and its treatment is not taken seriously enough. Due to improve management of solid waste the number of people at risk of illness is huge. They find out that urbanization and industrialization increased the problem of solid waste. Ibrahim and Funwie (2020) presented a research paper on “Impacts of solid waste management practices on environment and public health – A case study Wadajir district in Benadir region of Somalia.” They analysed about the negative impacts of solid waste generation on environment and also discussed about the health issues which are generated by the solid waste generation and its un treatment practices. They examined that solid waste generated in the households consisted of organic food materials 68.6%, plastics 28.6%, polythene bags 2.9%. Such types of solid waste increased the problem of cholera, dysentery, typhoid, malaria and dengue fever etc. They found that residential and commercial areas has a huge amount of solid waste and have not management to treatment of this solid waste. A dump area is increasing around the industrial land and residential area. Singh and Chaudhary (2021) analysed about the sources of solid waste generation and also discussed about the environmental disasters. They pointed that solid waste generation is increasing in city due to urbanization, industrialization and poor management system of solid waste. In developing countries the growth of population is found very high and the rate of solid waste management is found very

poor/low so the problems of environmental degradation and health issues are increasing here. Gupta, Sharma and Bhardwaj (2023) analysed about the solid waste management and its effect on environment and human health. They analysed that solid waste reduce the harmful gases which effect the environment and human health. Population growth and generation of the solid waste has close relationship. Solid waste management system is very poor in the developing countries. They discussed about the sustainable management of solid waste to reduce the pollution level. They examined the negative impacts of solid waste generation on environment and human health. They also examined the causes of solid waste generation. They prepared a plan how to reduce the solid waste amount and how can be management it? They analysed the category of solid waste generation and prepared a solid waste management plan. Singh (2023) completed her research work on “Assessment of solid waste generation its implications and management in Lucknow city.” She analysed the generation rate of solid waste, sources, population growth contains of solid waste and the management techniques of solid waste. She compared the generation of solid waste and the population growth, she found that 8 words comes very high category of solid waste generation. These words are generating solid waste 13374.14–21318.83 kg per day. She estimated that 21.71% solid waste of this city belongs to non-biodegradable and 78.29% belongs to the biodegradable category. The percentage of biodegradable waste is found paper 15.33% card board 18.42%, food wastes 32.66% cloth 9.01%, and others 24.59%, in non-biodegradable waste she found plastics materials 25.45%, polythene 18.4%, glass 13.92% metal 15.45% and miscellaneous 26.58%. She analysed that lower income group and economically weaker section are more responsible for throwing wastes on open plots and road sides.

#### **METHODOLOGY:-**

To complete the present study the researcher used both types of data. Primary data has been collected from the study area by using the questionnaire. Personal interview method has been used to collect the primary data. The researcher has made an attempt of sample survey to collect the primary data from the study area. Secondary data has been collected from the Seoni municipal

corporation office, district statistical magazine of Seoni district and various sites of related to the research problems. Graphical and tabulation method is used to present the data. Statistical method is used to find out the result.

**Sampling-**

The following sample design table no. 1 is used to complete the present study--.

**Table No.1 Sample Design-**

S. No.	Sample Sources of Solid Waste	Total	Small scale	Medium scale	Large scale
1.	Households	30	10	10	10
2.	Hospitals	15	5	5	5
3.	Hotels	15	5	5	5
<b>Total</b>		<b>60</b>	<b>20</b>	<b>20</b>	<b>20</b>

The researcher collected 60 samples from the study area. There are selected 30 households, 15 hospitals and 15 hotels to collect the primary data from the study area. The researcher has selected 3 sources of solid waste generation to collect the primary data. These sources are divided into 3 category small, medium and large scale.

**Analysis- Study Area:-**

Seoni city is selected to complete the present study. It is the headquarter of district Seoni. The It is situated

22.08°N 79.53°E. It has an average elevation of 611 meters (2004 feet). The city is 2,043 ft. above sea-level, half-way between Nagpur and Jabalpur. It is bordered by Jabalpur, Narsinghpur and Mandla districts to the north, Balaghat to the east and Chhindwara to the west and the shares its southern boundary with Nagpur (Maharashtra). National Highway No. 7 connects the Kanyakumari-Banaras passes through the district from north to south. Fair weather roads connect the major towns in the district. The problems of pollution at many other place, is due to sewage inflow, animal carcasses, plastic bags etc.

**Statement of Research Problem:-**

Poor solid waste management generated many environmental problems and affected the human health. Uncontrolled population growth is generating solid waste at alarming rate. Municipal corporation is only one agency for collection and transport of the house hold waste. Pollution level of air and water is increasing day by day and generating many health issues. People are not aware about the solid waste management.

**Sources of Solid Waste:-**

There is a long list of sources of solid waste generation in the study area. The sources of solid waste generation are residential, commercial, institutional, municipal, industrial and open areas. These sources are given below in the following table no. 2--

**Table No. 2 Sources of solid waste generation in the study area Seoni City**

S. No.	Sources	Typical waste generation	Generated solid waste
1.	Residential	Households	Waste foods, fruits and vegetables, peels, plastics, clothes, wood, paper, polythene, glass, metals
2.	Commercial	Shops, stores, hotels, restaurants, markets, office etc.	Paper, plastics, glass, metals, wood, food waste etc.
3.	Institutional	Schools, colleges, hospitals, clinics, coaching's, government centers	Paper, wood, glass, metal, plastics, polythenes etc.
4.	Industrial	Light and heavy manufacturing units, construction sites	Housekeeping wastes, packaging, food wastes, ashes, demolition materials etc.
5.	Municipal services	Streets cleaning, land scraping, park, beaches, other recreational areas	Leaf of trees, plastics, wood, paper, polythene, stones, broken bricks etc.
6.	Daily markets	Fruits markets, vegetables markets, fast food markets	Leaf of crops, waste fruits and vegetables, polythene, paper, wood, jute, plastics etc.

**(i) Residential–**

Population growth is very high in the developing countries. The expansion of the city is going-up. City has not own land for development. It is ex pensioned on the land of rural areas. Due to high population growth the demand of food and houses is increasing day by day. Due to urbanization the rate of generation of solid waste has been increased in the urban areas. These households generate a huge amount of solid waste. These households generate waste foods, paper, glass, clothes, plastics, metals, woods etc. On the basis of the sample survey the researcher has made an attempt to find out the result about the generation of the solid waste from the residential areas. Which is given below in the table–

**Table No.3- Generation of solid waste from the residential areas in Seoni city December–2024**

S. No.	Category of residential area (Households)	No. of H.H.	Total Solid Waste in a month (in kg)	Avg/H.H./Month (in kg)	Avg /H. H. per day
1.	High scale households	10	1425	142.5	4.75
2.	Medium scale households	10	960	96.0	3.20
3.	Low scale households	10	540	54.0	1.80
<b>Total</b>		<b>30</b>	<b>2925</b>	<b>292.5</b>	<b>3.25</b>

Source: Computed by the author on the basis of sample survey December-2024.

According to the above table the selected households generated 2925 kg solid waste in December 2024. The average generation of solid waste in high scale household is found 4.75 kg per day per household in the study area. In medium scale households the generation of solid waste is found 3.20 kg per day per households. In low level household it is found 1.80 kg per day per household in the sample household. It is higher 1.55 kg per day in high level household than the medium level household and higher 2.95 kg per day in high scale household than the low scale household. Due to high level of income in high scale households the purchasing capacity is found very high. So these households are generating a big amount of solid waste. These families spent a large amount of their income on foods and clothes.

**(ii) Commercial–**

To fulfill the requirements of the people the commercial services are established in the urban areas. These facilities provide various types of services to the people like that foods, clothes, milk, sweets, marriage hall, birthday party, administrative facilities, daily markets etc. These services generate solid waste such paper, foods waste, plastics, wood, metals, glass etc. These solid waste generated the environmental problems. They increased the air and water pollution. To complete the present study 15 hotels has been selected to find out the result. These hotels are increasing the amount of solid waste in the study area. The generation of the solid waste by the hotels and restaurants is given below in the table–

**Table No. 4- Generated of the solid waste by the hotel and restaurants in the Seoni city December–2024**

S. No.	Category of the hotel	No. of Hotels	Total generated solid waste in kg	Average per month (in kg)	Average per Hotel per day (in kg)
1.	Large scale	5	13087.50	2617.50	87.25
2.	Medium scale	5	9802.50	1960.50	65.35
3.	Small scale	5	4860.0	972	32.40
<b>Total</b>		<b>15</b>	<b>27750</b>	<b>5550.0</b>	<b>185.0</b>

Source: Computed by the author on the basis of sample survey December-2024.

According to the above table we found that 15 hotels generated 27750 kg solid waste in December 2024 in the study area. Large scale hotels generated 13087.50 kg solid waste, medium scale hotels generated 9802.50 kg solid waste and small scale hotels generated 4860.0 kg solid waste in November 2023 in the study area. Average generation of solid waste by the large scale hotel is found 87.25 kg per day, 65.35 kg per day by medium scale hotel and 32.40 kg per day by the small scale hotel in the study area. 15 hotels are generated 27750 kg solid waste in a month in the study area. All types of hotels



are generating 185.0 kg per day solid waste in the study area. Such amount of solid waste is creating the problems of environmental degradation and effecting the problems of air and water quality. These solid waste is responsible to increase the problems of animals diseases, death and human lungs problems. It is the result of adopting the western culture, foods, dresses and lifestyle etc. Due to increasing the per capita income mostly people prefer to take lunch and dinner outside the home.

**(iii) Institutional–**

It is an important sources of the solid waste generation. Schools, colleges, hospitals, clinics, offices, coaching institutes etc. are considered in institutional sources of solid waste generation. Now a days the use of paper is going high and high due to establishment of the offices and the demands of the facilities. A lot of schools, colleges, hospitals, clinics, coaching institutes etc. are establishing in the urban areas due to increasing the population growth and fulfill the requirement of this population. These institutions are generating solid waste like that paper, wood, glass, metals, plastics, waste food, rough clothes, cotton etc. Hospitals are also generating the hazardous solid waste and non-degradable waste which are dangerous for the human beings. The researcher has made an attempt to find out the result related to the solid waste generation by the hospitals. Researcher collected 30 days data of solid waste from the hospitals, which is given below in the table–

**Table-5: Generated of the solid waste by the hospitals in Seoni city December–2024**

S. No.	Category of hospitals	No. of Hospitals	Total generated solid waste in kg	Average per month	Avg. /H. H. per day
1.	Large scale	5	9075.0	1815.0	60.50
2.	Medium scale	5	7087.50	1417.50	47.30
3.	Small scale	5	4912.50	982.50	32.75
<b>Total</b>		<b>15</b>	<b>21075</b>	<b>4215.0</b>	<b>140.55</b>

Source: Computed by the author on the basis of sample survey December-2024.

According to the above table we found that selected 15 hospitals generated 21075 kg solid waste in December 2024 in the study area. Large scale hospitals generated 1815 kg solid waste in a month, medium scale, hospital generated 1417.50 kg solid waste in a month and small scale hospital generated 982.50 kg solid waste a month December 2024. The average generation of solid waste is found 140.55 kg per day from the hospitals. Large scale hospitals generated solid waste 60.50 kg per day, medium scale hospitals generated solid waste 47.30 kg per day and small scale hospitals generated solid waste 32.75 kg per day in the study area. On the basis of the above mentioned data we can say that large scale hospitals are more generator of the solid waste in the study area and small scale hospitals are the lowest generator of the solid waste.

**(iv) Industries -**

Industries generate solid waste in a large amount every year. These industries are depending on the raw materials so many types of wastes are generated by the industries. Metals, woods, plastics, cottons, cloths, glass, papers etc. are considered in this solid waste which is generated by the industries. Agricultural based industries generated solid waste like that polythene, plastics, wood, paper, ash, leafs etc. metals, chemicals, food and plastics etc. industries are more generators of the solid wastes. These industries generated different types of wastes which are dangerous for the environment and human health. Such types of solid waste generated the problems as air, water and soil pollution. These solid waste also generated the problems of lungs, respiratory systems and allergy etc. Such types of solid waste the municipality corporation has not suitable management systems to reduce and recycle it.

**(v) Municipal Services-**

Municipal services are also generating the solid waste in the study area Seoni city. Streets, roads, gardens, drainage systems, daily markets etc. are main sources of generating the solid waste. Municipal corporation is providing the service to clean and collect the waste from the residential areas. Leaf, papers, plastics, woods, glass, grass's and, stone, bricks,

clothes, polythene, mud etc. are considered in the municipal solid waste. The services of municipal solid waste collection is very poor and have not management or treatment plant for the solid waste in the city. The rate of solid waste generation is increasing day by day due to population growth, new construction, demolish of the old buildings, roads, sewer lines, festivals, party (birthday, marriage), religious organizations etc. Before coming the Indian monsoon municipal corporation works to clean the drainage systems in the city to control the problem of water logging in rain reason. So every year a huge amount of mud, polythene, clothes, plastics, woods etc. are generated by cleaning the sewer lines.

**(vi) Daily Markets–**

Nowadays daily markets like that fast foods markets, fruits and vegetables markets are generating a big amount of solid waste in urban areas. These are the regular markets and generating regularly solid waste in a large scale. Due to increase the demand of such types of foods (chawmin, gol gappe, tikki, momos, pizza, burger, manchuriyan, samosa, pakoda etc.) the amount of solid waste is increasing very high rate in the study area. Fruits and vegetables wholesale markets and retailers markets are generating a huge amount of solid waste by the waste of fruits, vegetables and packing cartoons, etc. Daily markets have not solid waste management systems. It is depend on the municipal corporation services for collection and transportation. Fishes and meats markets are increasing the amount of solid waste in the study area. Such types of markets are responsible to increase the level of air and water pollution.

**Composition of Solid Waste:-**

In the present study the researcher has made an attempt to find out the composition of the solid waste which is collected from the households, hospitals, restaurant etc. The composition of the solid waste is given below in the table–

**Table–6- Composition of the Solid Waste of the Households (December–2024)**

<b>Biodegradable</b>	<b>In %</b>	<b>Non-Biodegradable</b>	
Paper	18.74	Plastics Materials	28.38
Food Waste	31.26	Polythene	23.45
Cloth	8.57	Glass	11.72
Cardboard	12.30	Metal	10.27
Others	29.43	Miscellaneous	26.18
<b>Total</b>	<b>100</b>	<b>Total</b>	<b>100</b>

Source: On the basis of the sample survey from the study area, Seoni City.

On the basis of the above table we can say that solid waste of the households have the papers 18.74%, food waste 31.26%, cloth 8.57%, cardboard 12.30% and others materials are 29.43% in the composition of biodegradable solid waste. In non-biodegradable solid waste we found plastics materials 28.38%, polythene 23.45%, glass 11.72%, metals 10.27% and miscellaneous 26.18% in the collected households solid waste.

**Impacts of Solid Waste on Environment:–**

Due to increasing the amount of solid waste in the study area Seoni city and poor solid waste management system the problems related to the environmental degradation and human health are increasing day by day. It is affecting living and non-living components of the environment. The key health threats are considered to be indirect and awakened from the spread of disease by the vectors, as most untreated waste is dumped into the streets and stagnated these without being collected. The untreated solid wastes generate many insects like that mosquitoes, flies and other insects which create the health risk problems like that cholera. So not only human health is affected by the solid waste generation but also environment also affected by it. It’s increased the pollution level of air, water and soil. Air and water pollution generated many health issues like that lungs problem, kidney diseases, liver diseases and respiratory problems. So polluted water and air is the result of the untreated solid waste and such types of diseases are the result of polluted air and water. Not only human health is affected by the solid waste generation but also animal health is affected by it. Many cattle are like that

cows, dogs, pigs, bulls etc. are consumed the hazardous and poisoned waste foods and harmful chemical based polythene. So they are going unhealthy and sick and getting death before completes their life. So we can say that cattle are being dead due to consume poisoned foods. Main effects of solid waste generation are given below–

1. Degraded air, water and soil quality
2. Emission of methane gas
3. Increased pollution level
4. Increased the infection and transmit diseases
5. Land degradation
6. Decrease the immunity of living things
7. Increase the garbage heaps and decreased the beauty of the city

#### **Solid Waste Management:-**

To control the over generation of solid waste rate the suitable and sustainable management is essential. Public awareness and participation is essential to solid waste management. Solid waste management is a process to collecting, treating and depositing of garbage and other waste materials. In developing country the solid waste management system is very poor. The collection of solid waste from the residential area is collected by the municipal corporation vehicles. They collect, transport and deposit it but have not treatment technology. These developing countries use this solid waste to landfill, incineration and dumping but have not recycling, reusing and composting technology to management it. Five keys can be used to solid waste management.

Generation of solid waste is the first stage to management the solid waste because we should understand the solid waste generation sources and which materials are useless, reuse and valueless. Which materials are not requiring long period. So we want to get rid of such types of materials. Storage is second stage which tells us about the materials is not suitable for keeping a long period. Storage is a system for keeping materials after they have been discarded and prior to collection and final disposal. In this method we can store solid waste in a small bins, household containers, communal bins, polythene bags etc. It will be helpful to management the solid waste. Collection of the solid waste from the generation source is essential to prevent the environmental problems. So the work collection of the solid waste should be regularly from the generation sources of the solid waste. It can be collected in a large bins and communal bins from the generation places. It's simply reform to how waste is collected for transportation to the final disposal site. After collection the solid waste from the bins we need to transport it. Means of transport for it transportation should be used to the generation amount of the solid waste. Rickshaw, van, trucks etc. are some means of transporting the collected solid waste. Disposal is the final stage of solid waste management. There are four main methods for the disposal of solid waste– land filling, composting, incineration and recycling.

#### **Model for solid waste management-**

These steps are essential to solve the problem of solid waste management. We should apply this method to reduce the solid waste generation. Minimum resources should be used as maximum benefits. Which resources and materials are suitable for useable than it should be reused many times to save the resources and reduced the level of solid waste generation. Recycling is another method to control the solid waste generation. It is are processing of discarded materials like that glass, newspapers, papers, plastics, rubber etc. into new useful products. Reduce; reuse and recycle can help in saving money, energy, raw materials and them by help in reducing pollution.





## What are the 3R of Solid Waste Management

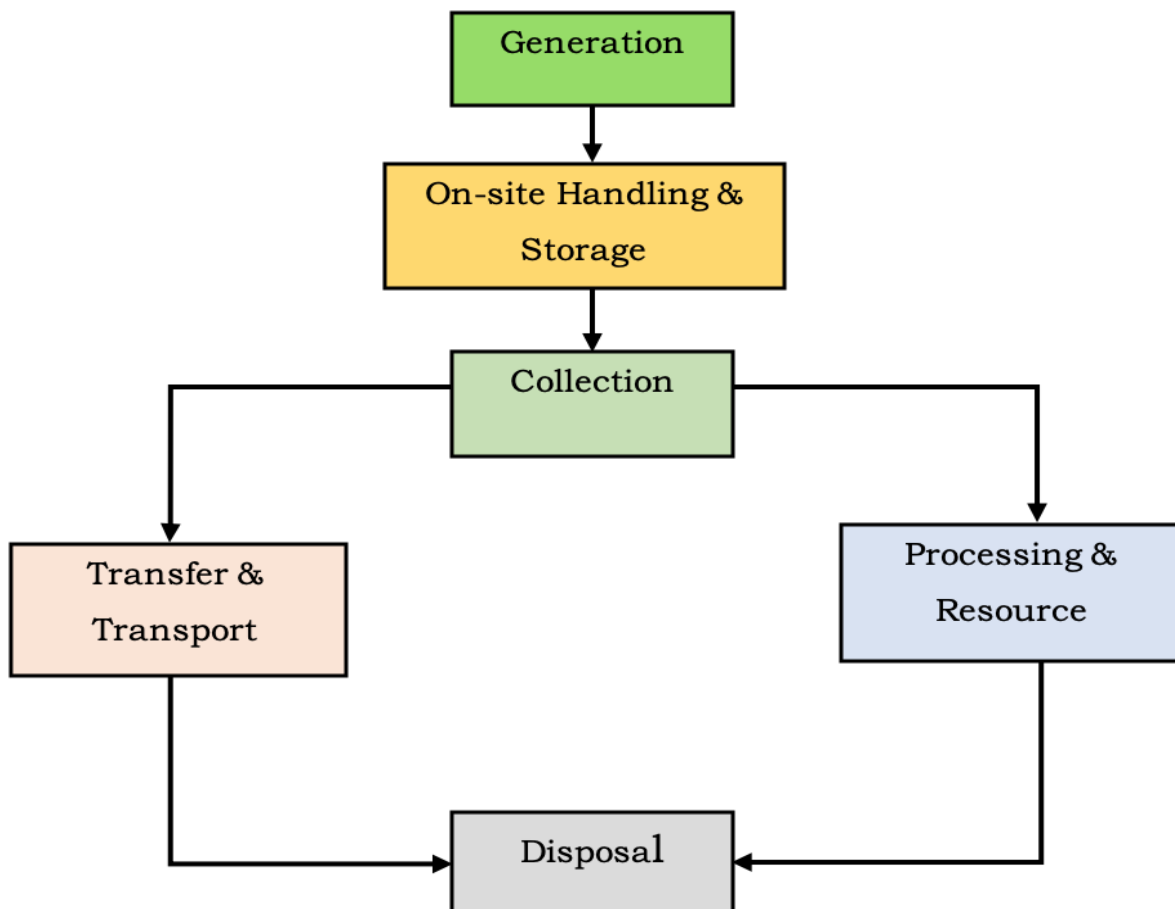


Fig. 1- Model for solid waste management

**Solid Waste Management System in Sample Sources of Solid Waste Generation:–**

The researcher has made an attempt to analyse the methods of solid waste management of the sample sources of generation of solid waste. The following methods are used to management the solid waste in the sample sources of solid waste generation.

**Table–7 Management of solid waste in the sample sources of solid waste generation in Seoni city**

S. No.	Sources of solid waste	Management of solid waste
1.	Residential area	a. Use dustbin to collect the solid waste. b. Use community bins to collect the solid waste. c. Transported it by the vehicle of municipal corporation. d. Municipal corporation vehicles collected, transported and deposited it.
2.	Hotels	a. Collected it in large bins. b. Transported it by rickshaw and auto rickshaw. c. Deposited it in open area. d. Segregated it and used different types of bins for collection.
3.	Hospitals	a. Use different types of dustbins to collect the different types of waste. b. Segregated the materials to reuse and recycle. c. Transported it by the rickshaw and auto rickshaw or municipal corporation vehicle to deposit it.

Source: Prepared by the author on the basis of sample survey.

On the basis of the field observation we found that these sources of solid waste generation have very poor management system for solid waste. All sources are depending on the municipal corporation vehicles for collection and transportation of the solid waste materials. These sources have not treatment technology for recycling and compositing it. Mostly sources deposited it in open ground area inside or outside the city. People are not aware about the management of the solid waste in the study area.

**CONCLUSION:-**

Present research concluded solid waste include mixing household and commercial garbage with hazardous waste during storage and handling, storing garbage in old or poorly managed facilities, deficient transportation practices, open-air incinerators, informal/uncontrolled dumping, and non-engineered landfills. The implications of such practices include air and water pollution, land degradation, climate change, and methane and hazardous leachate emissions. In addition, these impacts impose significant environmental and public health costs on residents with marginalized social groups affected mostly. On the basis of the primary data related to the solid waste generation, management and its impacts, on environment we analysed that increasing the population

is the main cause of solid waste generation. Due to over population growth the demand of the raw material sand useful materials has been increased in the study area. Life style has been changed and people are preferring packets foods, fast foods, decorative articles, new construction, outing lunch and dinner. So the amount of solid waste is increasing at alarming rate and generating the environment problems. Air, water and soil pollution level is found very high near about the waste deposited areas. High standard residential areas are generating a huge amount of solid waste due to high purchasing capacity. Large scale hotels, hospital, daily markets, marriage halls, industries, institution etc. are more responsible to increase the level of solid waste in the Seoni city. Plastics, bottles, woods, papers, clothes, tin, metals, glass, polythene, wrappers, foods, fruits and vegetables waste, leaf of trees, mud, stow, bricks, dust etc. are contained in this solid waste. Deposited area generated methane gas to decrease the environment quality and increased the air and water pollution level here. Poor solid waste management is present here. Financial problems is an another issues for the municipal corporation for the management of the solid waste. Demolish and work renewal of the old buildings is an issue to increase the solid waste in the study area. Mostly solid waste is depositing in the open areas.

**Suggestions for the future Study:-**

Some suggestions are given below for management the solid waste in the study area–

1. Collection of the solid waste by the dustbins should be regularly by the municipal corporation from the generation sources.
2. Community dustbins should be established according to the ratio of the population and it should be transported regularly.
3. Awareness programme should be speared at large scale in society related to the solid waste management.
4. Treatment plant of the solid waste should be outside from the city to control the pollution level.
5. Recycling process should be based on latest technology which should be eco-friendly.
6. Income sources of the municipal corporation should be increase to collection of the solid waste, transportation of solid waste and depositing of solid waste.
7. Banned the polythene and generate its option which is suitable for the environment and human health.
8. Prepare small pits to deposit the solid waste for prepare the composite manures. Which is useful for the plants and crops.

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