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A

PROJECT REPORT

ON

SOLID DOMESTIC WASTE DISPOSAL

(SURVEY OF JAIPUR CITY)

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SOLID DOMESTIC WASTE DISPOSAL (A Survey of Jaipur City)

INTRODUCTION

Any product by product or residue that can not be used profitably is called a waste. A waste product is regarded as pollutant where it damages the environment.

Wastes may be (i) Biological (ii) Chemical (iii) Physical in nature and may originate from the following activities manufacturing. Agriculture and dairy energy production transport and house building and house keeping.

Solid waste is that material which arises various human activities and which is normally degraded as useless or unwanted.

The solid waste include Garbage Rubbish glass containers, as bottles, crokeries, plastic containers, polythene and other packing material that are used and than thrown away as garbage. These pile up at public places and cause obstruction in daily life. Besides these there are also other used thing are thrown as junk. The wastes from building material sludge, dead animal skeleton, heaps of crop residues also continue to solid waste.

The principal sources of solid wastes are domestic, commercial, industrial and agricultural activities many times domestic and commercial wastes are considered together as the so called **urban waste**.

The main constituents of urban waste are similar through out the world but the weight generated the density and the proportion of constituents vary widely from country to country, and from town to town with in a country according to the level of economic development geographical location, weather and social conditions.

In general it has been found that as the personal income rises. Kitchen wastes decline but the paper, metals and glass wastes increases the total weight generated rises but the density of the waste declines.

In India authentic information regarding the composition of the urban wastes is not generally available as regular analysis of the refuse is not composition and the geographical temporal and seasonal variation in its composition make it difficult to define a typical refuse.

The solid refuse generated in urban areas contains articles of various sizes and types and consists of dust, vegetable leaves, waste paper, large paper board cartons, glass bottles, worm out tyres, carcasses of animal and night soil.

Human and animal activities generates many wastes that are discarded as useless or unwanted. These wastes are normally solid and result in land scape pollution. The term refuse is often used inter changeably with the term solid wastes. The term solid wastes encompass the highly heterogeneous mass of discarded materials or throwaways from the urban community as well as the more homogeneous accumulation of waste generated by agricultural and industrial activities.

Classification of solid wastes

a. Garbage or food wastes: - These are meat, fruit or vegetable resides which decompose rapidly especially in warm weather.
   Example : Vegetable and fruit peels, left over's meat bones, spoiled food items.

b. Rubbish: - These do not decompose rapidly. These are further of two type:-
   -Combustible: - Paper, Card Board, Textiles, Wood items, Rubber etc.
   -Non Combustible: - Crockery, Metals, Aluminum Cans, Tin Cans, Empty Glass Bottles

c. Agricultural Waste: - These includes crop residues from agricultural fields, farm manure etc.

d. Pathological wastes: - Carcass of animals, slaughter house waste, [blood, pieces of meats, hair, fat, bone chipping, skin excreations etc.]

e. Aquatic weeds: - These are a menace because of their prolific growth. They increase water born diseases hinder traffic and fishing and cause eutrophication

Solid wastes are causing many problems in developed effluent countries.

In India also several million tones of solid waste is dumped in open area along highways and other places in large cities as Delhi, Mumbai, Kolkata, Jaipur, Chennai etc.

Presently solid waste are dumped on land, leading to air and water pollution as a result there is emission of wide variety of organic compounds resulting in serious health problems. This mode of disposal requires a large area of land every year in urban cities.

According to Anju Kohli et. al. Waste generation in small towns is small whereas in cities having population over 20 lakhs it is high. The range varies 200-500 gm per person per day. Over population is main reason of rapid growth in the quantity of solid waste.

Improper handling of solid wastes is a health hazard especially for the workers who comes in direct contact with the wastes. During handling and transfer of biological wastes disease transmission may take place by infection through open sores or vectors likes rates, and insects which invade refuse dumps for food.

Municipal solid waste management is one of the essential services and it is the obligatory duty of the municipal bodies to arrange for Daily Street cleaning and transport, processing and disposal of waste in the urban areas.

SURVEY:-

The Solid waste disposal is one of the major problems in under developed countries like India. The disposal of waste is of various categories. The most common method is used to disposal in India is dumping in open land which is not the appropriate one. The survey of one of the popular city (Jaipur) which is full of cultural heritage shown significant conclusions.

Jaipur contains two major areas walled city and attached colonies. The survey was made in various area of jaipur city.

City has 4,107,000 (Year 2022) population containing more than thousand colonies. The colonies generate tons and tons of domestic waste and out of which solid domestic waste is in bulk amount.

The survey was made in such a way that all the region of Jaipur city are observed. Most of the colonies have their unauthorized and illegal dumping sites which are supposed to be unconstructed or partially constructed land areas or plots near to the public parks or the area left for any commercial purpose like proposed markets parks, play grounds or area protected as range land, forest land etc.

Jaipur is a one of the popular city among the tourist at national and International level. It is known to be heritage city.

The city is just 20% of the total Jaipur at present that shows that the Jaipur have been extended a lot due to which the waste generated is multiplied.

Out of which the colonies in the out skirts generating waste [domestic waste] are throwing nearby. It shows the tendency of inhabitants which cleans the house inside and throwing the waste outside making a dirty surroundings.

The survey was done in the walled city as well as in the outskirts.

The Ramganj is located at the south east area of walled city known to be highly populated congested area.

It has open dumping sites everywhere just close to street ends. The domestic waste is thrown out including the feces of children generates lots of pathogens.

Another site surveyed was Chandpole Bazar.

It is most crowded market of Jaipur which encloses old colonies although it is a planned area but full of domestic waste dumped everywhere.

Extending towards the out skirts, attached to walled city is located Tilak Nagar.

It is also conjusted, densely populated area where there are no proper dumping sites found. The dumping as earlier found as thrown just out side the house or near to the colonies in open. This area contains most of the commercial places where the waste generated is also thrown at the common place where the domestic waste is dumped.

Moving towards the south of Jaipur Malviya Nagar is observed as one of the site of Survey.

In this area comparatively the dumping sites were not very close to the colonies the Municipality departments have worked for it. But still the waste generated by the inhabitants is thrown somewhere near. Comparatively this area is little clean.

At the west of Jaipur Gopalpura have observed. In this area the waste was observed to be dumped in open near the colonies where partially constructed house known to be dumped area or near to the parks or near to the shopping centers.

Close to the walled city is located Sindhi Camp Main Bus Stand of Jaipur.

This is the most crowded area of Jaipur which is full of hotels, shops, departmental stores and colonies. Although earlier it was a planned area but now this has become the most crowded due to encroachment. Thus there is no special dumping areas, as such with the result this is full of pathogens and dirty foul areas.

DISCUSSION AND RESULT:-

The purpose of survey is to indicate the population created due to solid waste disposal. It has become a trend of the under developed countries like India to dean the house inside and dirty the place outside. This indicates the least botheration of the inhabitants about waste generation and improper disposal although the right way of disposal could be applied or implemented on the disposal. This improper disposal on the road sides, street ends and in the unconstructed land areas near the parks can create the air, land and water pollution at chronic level.

The site can generate millions of pathogens which can pollute ground water, land and air. These sites contain the biodegradable as well as non-bio degradable waste. The biodegradable has a solution but non-biodegradable is a big question mark as it remains as such and only increased with increasing the dumping of waste. This non-biodegradable waste contain plastic, Aluminium cans, polythenes etc is also taken up by the animals which are wandering on the sites like cows, street dogs, pigs, donkeys etc.

These animals wander for the search of kitchen waste like vegetable, fruits and cooked food thrown away with kitchen waste. These

waste products are packed into polythenes and than thrown. As a result these packets are taken up as such by these animals. The polythene remains in the rumen of these animal gets into trouble and sometimes even the animals face severe digestive problem. Some examples are found in Jaipur itself where the cows died of the burst of rumen.

The legal aspects here are that the polythenes should be used of 0.5 μ size which is set to be degraded in a short time otherwise these polythenes were strictly prohibited.

The soil beneath the dumping area is high in nitrates, phosphate and pathogens.

Here the available phosphate although is in higher amount due to the kitchen waste biodegradation but this also creates a problem for the flowering plants. The flowering time is changed is the abnormal.

Nitrates are also in higher amount increased on dumping sites due to biodegradation. These nitrates can cause overgrowth of microbes which at one site increases the humans but inhibits the function of different minerals.

The pathogens are produced by decayed peals off of vegetables fruits and cooked food. A time this also includes the sanitary waste in the slum areas. The variety of pathogen increases because of humid place. These pathogens are carried by the street dogs, pigs and other wandring animals like cows, buffalos.

These animals transmit these pathogens to either the open water body near by the dumping sites or to the colonies.

The most common pathogens are E Coli, Antamoeba histolitika, coccis, Aspergillus, penicillium. These days the asthma in children is common problem. This may be caused due to air pathogens wandering in the colonies.

The foul smelled air contains many strains of microbes [Bacteria and Fungi]. The most common fungal diseases is [skin] are due to these pathogens.

The polluted air and contaminated contain many type of pathogens by which many type of diseases caused as skin, respiratory digestive diseases.

The most common Bacterial pathogens are vibrio cholrea which causes cholera, bordetella pertussis causes pertussis, clostridium botuliuum causes botulism, salmonella scrotype causes salmonellosis and yersinia pestis which causes a very common disease known as Bubonic plague through Rat.

Another pathogens are protozoa. The coomon pathogenic protozon arec Toxoplasma contaniuated food and plasmodium spp. which causes Malaria disease and its transmission vector is mosquito.

Other type of pathgens are fungi. The main fungal pathogens are Aspergillus, coccidiodes immitis, Blastomyces dermalitidis, Histoplasma

capsulatum which causes Asper gillosts otomycosis, Cocci diodomysosis, Blastomycosis, Histoplasmosis respectively and their transmission vector is Air.

The main of increase in solid waste pollution is overpopulation affluence and technology reason for the rapid growth in the quantity of solid wastes are over population, affluence and technology.

a) Over-population: As the number of people producing a pollutant increases pollutions will naturally increase, same is time for solid waste pollution also which increase with the increase in population.

b) Affluence: (ie production or percapita consumption) with affluence there is a tendency to declare items being in or out of fashion and promptly throw away the ones out of fashion. This results in solid waste pollution.

c) Technology : [ie amount of pollution produced per unit of economic good] : Rapidly growing technologies for most economic goods indicate a shift in technology for the returnable to non-returnable packaging. This has resulted in the phenomenal growth of packaging industry which encourages self service merchandising by packages that help to sell the product by themselves. Returnable glass containers or bottles are being replaced by non returnable cons, bottles paper board and plastic containers.

Packaging is largely responsible for causing solid domestic waste pollution because packaging materials like plastic bags and cans etc. are not biodegradable and persist unchanged in disposal operation such as landfills. Plastic can be recycled to make new pakes but recycled plastic soon loses its strength becomes brittle and is easily broken up by wind and rain.
The per capita contribution of solid waste has increased manifold due to increase in urbanization lack of awareness, lack of public participation and poor enforcement of laws.

Improper handling of solid wastes is a health hazard especially for the workers who comes in direct contect with the wastes. During handling and transfer of biological wastes [from hospitals and clinic] disease transmission may take place by infection through open sores or vectors like rats and insects which invade refuse dumps for food.

Rats spread many diseases like plague, salmonellosis, endemic typhus, trichinosis etc. through direct bite. They quickly proliferate and spread to neighbouring area destroying property and spreading diseases. Flies breads on refuse dumps, human feaces etc. from where they migrate to food and water and result in transmission of way disease like bacillary desentry, diarrhoea and amoebic dysentery in humans.

The improper disposal of hazardous wastes result in contamination of crops or water supplies and thus pose a serious health hazard for humans and animals resulting in acute effects like death large scale epidemic of cholera, gastrointestinal diseases, jaundice, hepatitis etc result from contamination of

soil and water bodies by the leachate from decomposed and purified garbage dumps.

Chocking of drains and gully pits by the solid wastes result in water logging especially during the rainy season. This water logging results in breeding of mosquitoes in the stagnant water.

Indiscriminate disposal of solid, wastes, especially of hazardous wastes causes adverse environmental effects. The main objective of solid waste management is to minimize these adverse effects before it becomes too difficult to rectify in the future.

Solid waste management is a manifold task involving many activities like:

(A) Collecting of solid wastes.

(B) Disposal of Solid wastes.

(C) Waste utilization

(A) **Collecting of solid wastes**:- Collection includes all the activities associated with the gathering of solid wastes and the hauling of the waste collected to the location from where the collection vehicle will ultimately transport it to the site of disposal.

(B) **Disposal of solid wastes:-** Before the solid waste is ultimately disposal of it is processed in order to improve the efficiency of solid waste disposal system and to recover usable resources out of the solid wastes.

The processing techniques such as compaction ie mechanical volume reduction or incineration ie there volume reduction and manual component

separation ie manual sorting of the waste are employed to increase the efficiency of solid waste management.

Due to heterogeneity of the city refuse it is important to select the most appropriate solid waste disposal method keeping in view the following objectives:-

a) It should be economically viable ie the operation and maintenance costs must be carefully assessed.

b) It should not create a health hazard.

c) It should not cause adverse environmental effects.

d) It should not be aesthetically unpleasant ie it should not result in offending sights, odours and noises.

e) Sanitary landfilling or controlled oppurtunities for recycling of material.

The methods of disposal commonly used are:-

1) Salvage or manual component separation

Before ultimate disposal, the manual separation of solid waste components is accomplished to achieve the recovery and reuse of materials, cardboards, newsprints, high quality paper, glass, metals, wood and alluminium cans etc. are manually sorted out or salvaged either for recycling or for resale.

2) Compaction or Mechanical volume reduction

After separation of reusable or disposable articles, compacters are used to compress the waste materials directly in to large containers or to form bales that can be then placed in large containers, compaction increases the useful life of landfills.

3) Open dumping

Open dumping of solid wastes is done in low lying areas and skirts of the towns and cities. Being comparatively cheaper, this method of disposal is used extensively in India, however major disadvantages are:

a) Public health hazards are caused by the breeding of flies, mosquitoes, rats and other pests.

b) Obnoxious gaseous and particulate matter are produced by burning of the combustible solid wastes resulting in air pollution.

c) Open dumping requires large land areas which further aggravates the problem of land shortage for human habitation.

4) Incineration or Thermal volume reduction

Highly combustible wastes like plastics, cardboard, paper, rubber and combustible wastes like cartons, wood scrap, floor sweeping food wastes etc are subjected to incineration ie burning at very high temperature.

5) Sanitary land filling or controlled tipping

It involves the disposal of municipal waste on or in the upper layers of earths mantle especially in degraded areas in need of restoration.

In land filling the solid wastes are compacted and spread in thin layers each layer being uniformly covered by a layer of soil. The final layer is covered by a final cover of about one meter of earth to prevent rodents from burrowing into the refuse and scattering.

This is a biological method and does not create environmental damages by creating nuisances or of pests and disease vectors.

6) Land farming:

In this waste disposable method the biodegradable industrial wastes are treated by the biological, physical and chemical processes occurring in the surface of the soil.

(C) Waste Utilization: - A developing country cannot afford wastes, by proper utilization of solid waste a developing country like India can avail of many advantages for instance.

1) Waste utilization directly or indirectly contributes to economic development
2) Waste utilization generates employment opportunity
3) Unused solid wastes create environmental hazards by spreading diseases and causing air and water pollution
4) Waste utilization helps in conservation of natural resources
5) Waste utilization helps to generate many useful products which are the basic necessities of life waste utilization is achieved by three techniques.
    i) Reuse ie a given material has multiple uses.
    ii) Reclamation ie a component of the waste is recovered for use in a manner different from its original use.
    iii) Recycling ie isolating the material from which a given product was made and reintroducing it into the production cycle for production of the same product.

Municipal solid waste management is one of the essential services and it is the obligatory duty of the municipal bodies to arrange for daily street cleaning and transport processing and disposal of waste in the urban areas. Urban local bodies generally fails to make adequate provision for the primary collection, transportation and disposal of waste in an environmentally acceptable manner. It is estimated that the total waste generated in urban areas is about 40 millions tones every year.

Presently solid domestic waste is dumped on land, leading to air and water pollution as a result there is emission of wide variety of organic compound resulting in serious death problems. This mode of disposal requires a large area of land every year in urban cities. Decomposition occur aerobically at a slow disposal. This has led to the development of various technologies namely, composting, pelletisation, Biomethanation, land filling, Incineration and basification. Among the various technologies available for conversion of municipal solid waste, biomethanation appears to be the most effective management as it results in the production of biogas and digested sludge which can be used as a fertilizer.

Waste generation in small towns is small whereas in cities having population over 20 lakhs it is high. The range varies 200-500 gm per person & per day. Municipal solid waste of Indian cities have small percentage of recyclable material and more of compostable and inert materials like ash and road dust, Rag pickers which collects recyclable waste from the streets, bins disposal sites take away paper, plastic metal glass, rubber etc.

Solid domestic waste consists of food waste, paper, plastic, glass, metal, rags, and packaging material, associated with moisture. Most household shops, establishment, hospitals and other often throw such waste on the street sides at random hours.

Disposal of wastes : Sweepers sweep the street and make small heaps of waste on street and then transport this waste by hand card into a community storage bins on streets, daily, alternate days, weekly or biweekly the waste is transported from the storage bins to the dumping site depending upon the locality of the city. Open crude dumping of waste in a most unscientific manner in low lying areas is the commonest method used in the country for the disposal of wastes, some cities not having dumping sites even dump their waste haphazardly outside their city limits along the high way sides, creating heaps of waste one the road sides. Only few local bodies do composting.

The legal method for disposal of waste: Laws governing urban local bodies make it obligatory to ensure regular cleaning of their public streets and disposal of wastes collected from these. In the absence of adequate legal proper storage of waste at source its community collection and disposal into the municipal system. In the absence of proper legislation it is neither mandatory for the people to have a domestic bin, nor compulsory for urban local bodies to provide for community based collection, resulting in insanitary conditions in urban areas which affect the environment adversely. According to municipal solid waste management and rules 2000 some rules shall apply to very municipal authority responsible for collection. Segregation, storage, transportation, processing and disposal of municipal solid wastes

According to these rules the responsibilities of municipal authority is:

1) Every municipal authority shall within the territorial area of the municipality be responsible for the implementation development for collection, storage, segregation, transportation processing and disposal of municipal solid wastes.

2) The municipal authority or an operator of a facility shall make an application in form-1 for grant of authorization for setting up waste processing and disposal facility including landfills from the state board or the committee in order to comply with the implementation program laid down in schedule I.

3) The municipal authority shall comply with these rules as per the implementation schedule laid down in schedule I.

4) The municipal authority shall finish its annual reports in form –II

   a) To the secretary in-charge of the department of urban development of the concerned state or as the case may be of the union territory in case of a metropolitan city

   b) To the dist. Magistrate or the deputy commissioner concerned in case of all other towns and cities.

   With a copy to the state board or the committee on or before the 30^{th} day of June every year

Responsibility of the state government and the union territory Administrations:-

1) The secretary in-charge of the department of urban development of the concerned state or the union territory as the case may be shall have the overall responsibility for enforcement of the provision of these rules in the metropolitan cities.

2) The district magistrate or the deputy commissioner of the concerned district shall have the overall responsibility for the enforcement of the provisions of these rules within the territorial limits of their jurisdiction.

Responsibility of the control pollution control board and the state board or the committee:-

1) The state board or the committee shall monitor the compliance of the standards regarding groundwater, ambient air, leachale quality and the compost quality including incineration standards as specified under schedule II, III and IV

2) The state board or the committee, after the receipt of application from the municipal authority or the operator of a facility in form I for grant of authorization for setting up waste processing and disposal facility including landfills, shall examine the proposal taking into consideration the views of other agencies like the state urban development department. The town and council planning department, Airport or Air base authority the ground water or any such other agency prior to issuing the authorization.

3) The state board or the committee shall issue the authorization in form III to the municipal authority or an operator of a facility within forty five days. Stipulating compliance criteria and standards as specified in schedule II, III and IV including such other conditions as may be necessary.

4) The authorization shall be valid for a given period and after the validity is over a fresh authorization shall be required.

5) The central pollution control board shall coordinate with the state boards and the committees with particular reference to implementation and review of standards and guidelines and compilation of monitoring data.

Management of Municipal Solid Wastes:-

1) Any municipal solid waste generated in a city or a town shall be managed and handled in accordance with the compliance and the procedure laid down in schedule II.

2) The waste processing and disposal facilities to be setup by the municipal authority on their own or through an operate of a facility shall meet the specification and standards as specified in schedule III.

CONCLUSION:-

The solid waste pollution is a major problem in our city. The main significance of survey of JAIPUR city is to indicate the pollution created due to solid waste disposal. The improper disposal is a main reason of pollution which contains different types of pathogens. The walled city is the most polluted one.

The pollution caused by this improper solid waste disposal is one of the biggest problems faced by inhabitants.

In the developed countries has compaired the India the solid domestic waste generated is of another type and the problem faced is the quantity because of use and throw tendency but in India the most of the waste produced is recyclic except garbage, rubbish thus we create higher percentage of solid domestic wastes but the disposal is improper if it could be manage the solid domestic waste is not a big problem.

The municipal is least bothered about the disposal the thrown up waste is remains per months per year and a times ignore for a life time. This problem is awaited of political persons.

Those areas observed by ministers or VIPs are free of disposal sites but the colonies where these areas are not in the list of VIPs, presidents and ministers once in a while when these are observed are cleaned properly and the disposal is made at a right.

The study we can conclude that 80% locality contains improper disposal sites which are creating dirty foul pathogenic places.

REFERENCES:-

- Erving sax; Environmental management
- Dr. D.K. Thakur; Environmental problems, rules and Acts.
- Dr. Suresh K. Dhameja; Environmental Engineering and Management.
- Anju Kohil, Sadhna Kothari, A.P. Choudhary; Management of Environmental pollution.
- P.D. Sharma; Ecology and Environment [IIIrd Ed.]
- B.D. Singh; Biotechnology

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