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K.Mishra

Head of the Department, DRM,
Babasaheb Bhimrao Ambedkar
University (A Central
University of Lucknow, India

Sonia Singh

M.Phil student, DRM,
Babasaheb Bhimrao Ambedkar
University (A Central
University of Lucknow, India

Municipal solid waste management with special reference to Lucknow

K.Mishra, Sonia Singh

Abstract

The study of this paper explores the present status of waste management with reference to Lucknow City. MSW management traditional means such as land filling or incineration. The objective of the study to determine the quantitative and qualitative characteristics of MSW along with basic information for Lucknow City. Lucknow Nagar Nigam is working on this issue properly and helps to people and society for cleanness. The study describes the objectives of LNN and describes the schemes which related to MSW through by government and private policy of Lucknow. Improper management of SW (Solid Waste) causes hazards to inhabitants. Rapidly increasing population levels, rapid economic growth and rise in community living standard accelerates the generation rate of municipal solid waste (MSW) in Lucknow. Various studies reveal that about 70% of MSW is disposal of unscientifically in open dumps and landfills, creating problem to public health and the environment. The study is also explore how to use the waste for plant nutrient and microbial biomass, it is useful for the plants. The sample has been randomly collected from various locations. It provides a comprehensive review of the generation, collection and transportation, disposal and treatment technologies of MSW practiced in Lucknow City. The main point of this paper is Direction, Decision and Regulation in relation to waste management. MSWM safe is environment because it try to use the waste in land filling and those places where it is actually required. MSW as nutrient source for plant and as soil conditioner, it is cost-effective option. Composting is an attractive alternative of MSW recycling. A solid waste management defined as the discipline associated with the control of generation, storage, collection, transfer, transport processing and disposal of solid waste in a manner that is in accord with the best principles of public health, economic, engineering, conservation and other environmental consideration that is also responsible for public attitude.

Keywords: Environmental problem, municipal solid waste, land filling, waste transfer, disposal, cost estimation.

1. Introduction

Municipal solid waste management is defined as waste collection by, or on behalf of municipalities. These generally originated from households, commerce and trade, small businesses, office, building and institution such as schools, hospitals, government building, etc. Solid Waste Management (SWM) organised process of storage collection, transportation, processing and disposal or solid refuse residual in a sanitary landfill. It is an integrated problem process of several collection methods. Rapidly industrialization is increasing the many problems for environment and growth of unwanted population is also a big issue for the solid waste. Lucknow Nagar Nigam (LNN) intention receives the existing SWM system for Lucknow city and this improves the health and living standard of its resident. There is need to reduce the current level of waste and increase in energy recovery, which are considered as the essential steps towards an environmental friendly waste management system. Landfill also no longer the first choice for disposal among the other methods such as recycle, composting and incineration. Initially, incineration globally was used to reduce waste mass but energy is being recovered from incinerators. Electricity and heat is produced from the recovered bio-gas from landfill. From a mass view point of material recycling, composting of organic waste is considered as the most important system (Marchettini *et al.*, 2007). The scope of MSWM encompasses planning and management system, waste generation processes, and organisation, procedures and facilities for waste handling. Development strategies comprise specific objectives and measures in these areas. They need to consider the specific interest, roles and responsibilities of numerous actors. It includes households, community-based organisation (CBO) and other services user.

Correspondence:

K.Mishra

Head of the Department,
DRM, Babasaheb Bhimrao
Ambedkar University (A
Central University of
Lucknow, India

It also includes the major authority that is the Local government authority and also national Government Authority and also Non-Governmental Organisations (NGO) and also External Support Agencies (ESAs). In this present study, aim to covering solid wastes, management practices (including waste generation, waste collection, storage, transportation, recycle and disposal points), landfill site designing, cost estimation and use of wastes for bio-mass and plants. Lucknow is the capital of Uttar Pradesh situated between 26°52"N latitude and 80°52" E longitude and having a unique blend of heritage and culture. Lucknow has a warm subtropical climate with cool and dry winter from December to February and dry, hot summer from april to June. Lucknow has always been known as a multicultural city and flourished as a cultural and artistic capital of north India in the 18th and 19th centuries and as a seat of power of Nawabs. Today it continues as an important centre of education, commerce, finance, pharmaceuticals, technology, design, culture, tourism, music and poverty. Lucknow Municipal Corporation (LMC) is responsible for the management of the MSW generated in the city. Transportation and disposal of MSW are being performed by the transportation wing of LMC.

2. Objective of the study

The objectives of the municipal solid waste management that establishes waste reduction as the most preferred management technique, followed by reuse and recycling, then incineration with energy recovery, and, least preferred, land filling. All waste recycling measures should be implemented that are practical with available technologies and markets and which are not significantly more expensive than the waste disposal measures that would otherwise be needed. Technology, markets, and cost effectiveness should be reviewed regularly so that recycling may be expanded as new opportunities arise or, possibly, contracted if markets for particular materials disappear for a long time. The main objective of the paper is-

- To see how the waste material has been reuse and been recycled by the government that too local and national government and private sector.
- How the waste will be used for betterment of environment and soil.
- The process by which a waste is operated to energy source Resource Recovery Facility.



The City will operate, or cause to be operated, a waste to energy source Resource Recovery Facility (RRF) to burn the burnable solid waste remaining after reduce and recycle. Out of City land filling is the preferred disposal method for RRF ash, bypass waste, and non-processible waste that cannot be recycled or refused. "Bypass" means sending processible waste to out of country facilities for disposal when the amount of waste received exceeds the capacity of the country disposal system and projection predict that future waste receipts will cumulatively exceed the physically capacity of country facilities. In country land filling should occur only if cost effective out of country land filling options become unavailable or legislatively prohibited. The City solid waste acceptance, drop-off, recycling and disposal facilities are designed based upon projection of solid waste generated in the city. To conserve capacity at the RRF and at other solid waste and disposal facilities for the residents and businesses

of the City, the use of these solid waste and disposal facilities is restricted to solid waste generated in the City. This restriction does not apply to the Material Recovery Facility (MRF), where under the contract with office paper system (OPS), the country may allow other jurisdiction to use any excess capacity at the OPS facility. The City builds and maintains solid waste acceptance and disposal facilities primarily to accommodate municipal solid waste generated in the city. The city facilities may not necessarily accommodate other types of waste. The waste material which we found from houses, factory, industries etc. But there are many regions specifically in Lucknow, where there is no one to see this waste or to take initial and necessary steps to make our environment healthy and hygienic. On the other hand, People are also equally responsible for the waste they throw out of their houses without any concern. They actually not aware of what is to be done with this waste or the waste

can also be recycled and reused for the healthy environment. Now, the actual time has come when people must be aware of every new technology and must be aware of how the environment can be made hygienic and healthy for us and for our children.

3. Literature Review

Rapid industrialization and population explosion in India has led to migration of people villages to cities, which generated thousands of tons of MSW daily. The MSW amount is expected to increase significantly in the near future as the country strives to attain an industrialized nation status by the year 2020 Sharma and Shah (2005) CPCB (2014) Shekdar. Poor collection and inadequate transportation are accumulation of MSW at every noor and corner. The management of MSW is going through a critical phase, due to the unavailability of suitable facilities to treat and dispose of the larger amount of MSW generated daily in cities. Unscientific disposal cause an adverse impact on all components of the environment and human health Rathi, (2006) Sharholly (2005) Rayet (2005) Jha (2003) Kansal (2002) Kansal (1998) Singh and Singh (1998) Gupta (1998).The waste generated is consequently released into the nearby environment. Consequently the management of the MSW needs to be revamped to accommodate the changes in the quantity and quality to ensure the longevity of the environment. Due to several legislative, environment, economic and social constraints, the identification of most sustainable disposal route for MSW management remain an important issue in almost all industrialized countries Adani (2000) Generally, MSW is disposed of in low-lying areas without taking any precautions or operational control. Therefore, MSWM is one of the major environment problems of cities. It involves activities associated with generation, storage, collection, transfer, processing and disposal of solid waste. But, in most cities, the MSWM system comprise only four activities, i.e., waste generation, collection, transportation, and disposal. The management of MSW requires proper infrastructure, maintenance and upgrade for activities. This becomes increasingly expensive and complex due to the continuous and unplanned growth of urban centres. The difficulties in providing the desired level of public service in the urban centres are often attributed to the poor financial status of the managing municipal corporation Mor (2006) Siddiqui (2006) Ahsan (1999) Agricultural application of MSW, as nutrient source for plant and as soil conditioner, is the most cost effective MSW disposal option because of its advantages over traditional means such as landfilling or incineration. According to Canellas (2001), the use of MSW in agricultural lands can by the need of finding an appropriate destination for waste recycle. However, agricultural application of MSW may present a potential threat to the environment due to the presence of pathogens and several pollutants (heavy metal or organic pollutants). An attractive alternative to recycling such wastes is composting. Composting is a stabilization process through aerobic decomposition of wastes, which has been widely used for different types of wastes. During composting, through microbial action nutrients present in the waste are converted into plants available forms Ndegwa and

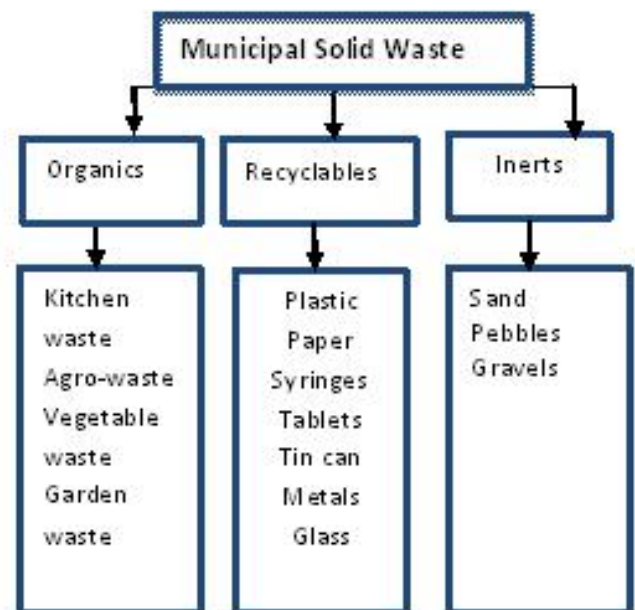
Thompson (2001). Composting cannot be considered a new technology, but among the MSW management strategies it is gaining interest as suitable option for chemical fertilizers with environmental profit, since this process eliminates or reduces the toxicity of MSW Araujo (2001) Kaushik and Garg (2003) and leads to a final which can be used in improving and maintaining soli quality Lamey and Hao (2007). Application of MSW a final product which can be used in improving and maintaining soil quality Lamey and Hao (2007). Application of MSW compost in agricultural soils can directly improve soil physic-chemical properties such as: soli structure, water retention capacity, buffering capacity and nutrient status Reeves (1997).

4. Research Methodology

In this study the selection of the data is secondary data collection in order to respond to the research questions of the study. The secondary data were collected directly from concerned offices, research institutions like universities and NGOs, which are closely dealing with the solid waste management issues, requisite secondary data were collected from Lucknow municipal authorities using a predesigned questionnaire. Initial planning and scheduling of the field visits with the sampling program were undertaken through an investigation survey at each site in Lucknow City.

5. Current situation of the MSW Management System in Lucknow City

Storage of MSW in Lucknow, residents collect waste in plastics buckets, dustbins and open dump sites. Street sweeping are also collected in community bins. There are 39 bins, 58 dholaons, 303 open dumpsites place across existing 110 wards. There are no separate bins exclusively for collection of waste paper, plastic, etc.



6. Collection and transportation of MSW in a Lucknow City, the wastes generation from various sources as resident, street sweepings, garden, park, offices and shopping complex is collected separately. Wastes from slaughterhouses and

hospital are mixed with the MSW at the storage bins. The collection system in Lucknow city is not sound structured and the reason behind it lack of awareness among the citizens as well as civil body responsible for collection of wastage. However, collection conducted in two stages. In first stage the waste is collected by the private operators from door to door in few areas viz. Gomti Nagar, Indira Nagar is transported to dustbin, dhalaos and open dump area. While the other part of the city, waste collected from small heaps, along with street sweeping, ahead of household by the Nagar Nigam reached to the secondary collection point. In second stage waste filled DP container are replaced with empty one by the Dumper placer vehicle. Separation of waste the recyclable wastes (i.e., paper, cardboard and plastics) are separately manually by kabadiwala and rag-pickers estimated at about 3200. The kabadiwalas purchase waste from residential and commercial establishments while rag-picker collect recyclables from market place, dustbin sort them before selling off. However, these recyclable are not segregated to the maximum extent, thereby allowing them to be a part of the landfill waste. Disposal of waste the waste from these collection depots is transported to the designated dumpsite. Waste from open dumps is collected in trucks/tipper trucks/tractor manually transported to the designated dumpsite, near fun republic mall Gomti Nagar, Hardoi- Kanpur ring road and Ram Daskheda, kursi road. Open dumps pose environmental hazards which cause ecological imbalances with respect to land, water and air pollution (Kansal, 2002). More than 90% of MSW in India is directly disposed of on the land in an unsatisfactory manner (Das 1998). Solid waste characteristic waste composition depends on a wide range of factor such as food habits, cultural traditions, lifestyles, climate and income etc. (Gupta et al., 1998). Sampling points were selected in posh localities and areas of medium and low standard of living, in consultation with municipal authorities of all cities. These represent various residential, commercial, market and industrial area.

7. Result and Discussion

The Lucknow Municipal Authority has established a Solid Waste Management System with the active participation of the Public sector and CBOs. While the collection and maintenance of cleanliness of the city is the task of the Public operator, monitoring and the Neighbourhood Management Committees carry out supervision. It has privatized waste collection monitoring and the Neighbourhood Management Committees carry out and sweeping services through a process of competitive bidding based on the lowest quoted unit rate per ton of waste collected. The private operator has to adhere to the SWM rules 2000 and put in the requisite financial, technical and human resource. At the end of the month, the operator based on the actual volume of waste collected raises a monthly bill, which is paid within 21 days. The private operator has opened computerized customer service office for requesting written or telephonic complaints of the management council and residents, which is operational round the clock, and

immediate steps are taken to rectify the complaint. It has developed a SWM monitoring system in which daily reports on the status of sweeping of roads, cleaning of urban centres, industrial area and collection of waste from households are filled up. They are planning to collect user charges from the resident for waste management to ensure full cost recovery from the end users. They relieve the Authorities from financial burden as the payment to the private operator will be fully recovered from the users, thereby making the SWM system financially sustainable. The involvement of Neighbourhood Management Councils in monitoring and supervision of the work of private operator has ensured that proper feedback is available to the officials regarding the quality of performance.

8. Conclusion

After all the study thus I can say that government still working in this issue. Municipal solid waste is useful for land filling and plantation also. The utilization of solid waste is the most cost effective MSW management option over traditional means such as land filling or incineration as it enables recycling of potential plants nutrients. Solid waste is helpful for soil nutrient present in compost. Organic materials change in soil, such as municipal solid waste compost (MSWC), promotes different activity. Different effects MSW compost application on soil microbial biomass and activity has been reported by numerous researchers. According to some studied, different technique of recycle and reuse of solid waste is giving effects on government policy which is through by municipal solid waste management. Substantial amount of heavy metal in MSWC does not seem to have any detrimental influence on microbial biomass and enzyme activities in soil. But there are some reports which show that heavy metals present in MSWC decrease the proportion of microbial biomass in total soil organic matter. The increase in soil microbial biomass with the MSWC amendments is mainly due to the microbial biomass present in the resident and the addition of substrate-c, which stimulates the indigenous soil microbes. Therefore analysis of MSWC is necessary before its land application. More research is needed with different soil types and MSW amendment rates to evaluate the effect of MSWC application on soil microbial biomass and reach the final conclusion.

9. References

1. Sunil KG, Sandeep KR, Pandey NB, Singh AS, Vivek KS, Trisha V. Municipal Solid Waste Characterization and Management Strategies for Lucknow City, , 2013.
2. Bundela PS, Gautam SP, Pandey AK, Awasthi MK, Sarsaiya S, Municipal Solid Waste Management in Indian Cities, 2010
3. Rahul CF, Singh LP, Earnest VP. Solid Waste Management and Characteristics in Lucknow, U.P. India, 2013.
4. Mufeed S, Kafel A, Gauhar M, Trivedi RC. Municipal Solid Waste Management in India Cities, 2008.
5. Ranjith KA. Waste Management in India, 2012.