

# A Review Paper on Study of Solid Waste Management through Different Methods

Yogendra Singh Patel<sup>1</sup> Gyanendra Kumar Chaturvedy<sup>2</sup> Ajeet Kumar<sup>3</sup> Dr. Janardan Singh Chauhan<sup>4</sup>

<sup>1,2,3</sup>Research scholar <sup>4</sup>HOD

<sup>1,2,3,4</sup>Department of Civil Engineering

<sup>1,2,3,4</sup>Samrat Ashok Technological Institute; Vidisha; M.P.(India)

**Abstract**— Through the recent survey it has been found that the major problem of solid waste and its management has increased in last decades. Solid waste requires high quality of management to control its prevailing in the environment. Solid waste is basically defined as waste or discharged material generated from household, domestic units, commercial centres and industries. This waste when collected in high amount produces harmful effects which can finally result in disasters. Through study of various surveys, it has been concluded that 90% of Solid waste is disposed in open dumps without any treatment process. Various methods are already adopted by local administrations like composting, incineration and land filling. Composting has been used for solid and municipal waste management but none of the above process gives fully positive result. The management of solid and municipal waste is a method to change it into usable resources by applying appropriate technique. These appropriate techniques when implemented with proper care can convert most of the residual product into the useful forms which further can be used by the small industries for various purposes to provide suitable solutions to many problems. Hence in this research various problems and techniques are identified and out of which the technique with proper solutions can be then implemented to provide the solutions to various administrative bodies.

**Key words:** Municipal Solid Waste, Landfilling, Incineration, Compositing and Plasma gasification

## I. INTRODUCTION

Solid Waste Management (SWM) is an organized method of storage, aggregation, transit, processing and discarding of solid residue in an engineered pure landfill. It is an integrated method and comprising varied collection methods, various transit equipment, storage, regaining mechanisms for recyclable material, decrease of waste volume and quantity by process such as compositing, useless to power and discarding in remark engineered sanitary landfill.

The method of trash management system involves pickup, carriage, processing, regaining or disposal of produced trash materials. The term municipal Solid waste generally pronounces to materials generated by household & industrial activities, and its supervision is normally undertaken to minimize their impact on health. Solid trash supervision is also abolishing to rescue resources from the solid waste. The solid waste management is able to involve solid, liquid and radioactive matter, with separate methods and fields of specialization for each.

Types Of Solid Waste:-

- Household waste (i.e. Municipal Waste)

- Industrial waste in other words (i.e. Hazardous waste)
- Biomedical waste (i.e. hospital waste)

## II. LITERATURE REVIEW

Anubhav Ojhaa, Abhishek Clement Reuben, Durgesh Sharmac (January 2012) Worked on Solid Waste Management in Developing Countries through Plasma Arc Gasification. In this report the graphical and statistical analysis of Municipal Solid Waste disposal method employed in different countries & the plasma arc gasification methodology. By this literature miscellaneous process of discharge municipal waste management and implied comparatively best process of plasma arc gasification, in which pyrolysis of solid waste takes place at very high temperature thus assure syn-gases as the output of gasifier.

Plasma is a high temperature column of electrically conductive gas. In environment, plasma is detected in lightning and on the plane of the sun. Plasma arc burn at high temperatures of 10,000°F and can trusty demolish any materials detected here on earth with the slander of chemical trash, whereas gaseous isotopes are not worn out by heat.

Kartik Gonawala, Ankita Parmar and Mehali Mehta (January 2014) Works on Plasma Gasification of Municipal Solid Waste. In this literature review they found some advantages of plasma gasification, below is the explanation of the paper. According to the paper the raw syngas product is temper and authentic, then it is used in one commingle of several product exercise: syngas for chemicals, gaseous fuels, liquid fuels burned in mercantile boiler to generate steam or in heat transfer method and in I.C engines to generate electrical energy. Combined cycles are also possible leading to co-production of electrical energy.

Result and conclusion of the above report is that the Gasification could now be introduced as a feasible choice solution for discharge waste remedy with energy recovery. The prosperity of an advanced thermal technology is intent by its technical credibility, environmental durable and financial convenience. The environmental realization is one of the peerless potency of gasification processing, which often is presume a sound reaction to the quickly preventive regulations put to use throughout the world, freely-calibrate ejection tests reveal that gasification is able to meet current emissions range and can have a great impact on the lack of landfill disposal option.

Mehtab Singh Chouhan, Sanjay Verma, Sarita Sharma, Niraj Metha (March 2015) Works on waste to energy potential in India according to research paper every year, approx. 55 million tons of municipal solid waste and approx. 38 billion liters of sewage are produced in the cities of India. In addition, huge amount of solid and liquid waste

are produced by plants or industries. Solid discharge waste is growth in India is expected to maximize very quickly at the forthcoming time. As more people moved to city areas and as revenue increase, expenditure levels are likely to increase, as are rates of waste generation is increase.

At about approximately 65.34% of the electricity consumed in India it is produced by the thermal, 2.70% by nuclear power plants and 10.42% by renewable energy sources. More than 50% of India's economic energy demand is met through the country's vast coal reserves. Electricity can be generated by burning municipal solid discharge waste as a fuel. Solid waste power plants are also called waste to energy plants, are designed to dispose of MSW International Journal of Chemical Studies and to generate electricity as a by-product of the incinerator operation.

Omar K. M. Ouda and Syed A. Raza (May 2014) Works on Waste-to-Energy: Solution for Municipal Solid Waste Challenges- Global Perspective according to them the overall world's population is about 7.2 billion by the year 2013 and it is project to increase 1 billion by the year 2025 with an average rate of 1% every year. According to research recent world's municipal solid waste production scale is 1.3 billion tons per year, and it is likely to rise up to 2.2 billion (approx.) tons per year by 2025. This outcome from population rise and the increase of per capita waste production rates from 1.2 to 1.42 kg person in everyday by the next fifteen years. It is important to show that world's averages are broad estimates only, as the rates changes surly by nation, city, and even within cities and towns also.

Recent world's Municipal Solid Discharge Waste growth scale is 1.3 billion tons in every year, and it is likely to rise up to 2.2 billion (approx.) tons in per year in 2025. This quantity is able to result in significant health, aesthetic, land-use resources, and financial concerns if not managed appropriately. Integrated municipal solid trash management approach objective to maintenance guide decisions about the generation of wastes, waste source reduction, reuse, regaining of materials, and ultimate disposal of the waste relics with optimum objective to rise in diversion rates from landfills is prevalent earthly.

B N K Njoroge, M. Kimani and D. Ndunge (February 2014) Review of Municipal Solid Waste Management: A Case Study of Nairobi, Kenya according to their study the current status of solid waste management basic requirement assuring enduring environment. Rapid development in cities like industrialization, population growth and rise in waste generation have change solid waste into a general public health and environmental care in Nairobi city area. Solid trash management system is harsh and very precious particularly tough to the urban poor who cannot adjoin the services and consequently left to conciliation with waste disposal on their own.

Solid discharge trash management system cadaver a general public health and environmental care in Nairobi and Kenya in general. A summary of the inference from the review on recent status of solid waste management. Solid waste pickup rate is approximately 33% of the waste generated, regaining rate is approximately 3.7% hence leaving about 63% uncollected trash.

Prof. M. R. Gidde, Prof. Dr. V.V.Todkar And Prof.K K Kokate (March 2008) Works on Municipal Solid Waste Management in Emerging Mega Cities: A case study

of Pune City according to study of the paper it is clear that quickly industrialization and development outburst in India has led to the emigration of people from town and villages to the cities, which creates thousands of tons of municipal solid discharge waste material. The MSW amount is foreseen to rise significantly in the coming future as the nation try to attain an industrialized nation position by the year 2020.

The isolation of waste material at origin and improvement of regaining or reuse of isolated materials decrease the amount of waste material and the load on landfills, and also provides raw materials for producer. The formation of municipal solid waste shows commonly organic matter, so fertilizing is a good process for treatment and structure of soil reformation The quickly rise in the amount of municipal solid trash material and the disability to provide daily pickup services be able to create a obstacle and health hazard. In Pune Municipal corporation area such state perhaps grows because of potential and scientific municipal solid waste practices implemented. The decentralized biogas plants founded on solid trash will be the ideal solution. It will also to produce the electricity, which will be the moreover benefit.

### III. CONCLUSION

As from the above research it has been educe that the typical or commonly used process of solid discharge trash handling like composting, landfill and incineration are not too much subsidiary to completely abolish the issue of solid discharge trash handling. In this gloomy state plasma arc gasification has come out as a very good resultant technology which not only dissolution of the garbage into elemental forms but also generates electricity and necessary by-products. The method works on a closed loop system which defensive the environment from poisonous garbage. Economics of the methods tells that it may be very feasible for increase economies and hence be able to happily apply in the countries like India

### REFERENCES

- [1] Anubhav Ojha, Abhishek Clement Reuben, Durgesh Sharma- "Solid Waste Management in Developing Countries through Plasma Arc Gasification- An Alternative Approach" ICESD 2012: 5-7 January 2012
- [2] Kartik Gonawala, Ankita Parmar, Mehali Mehta – "Plasma Gasification of Municipal Solid Waste" INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY, ISSN: 2277-9655, Impact Factor: 1.852, issue January, 2014
- [3] Mehtab Singh Chouhan, Sanjay Verma, Sarita Sharma, Niraj Metha - Review on waste to energy potential in India, INTERNATIONAL JOURNAL OF CHEMICAL STUDIES, ISSN 2349-8528, -ISSN 2321-4902, issue April 2015
- [4] Omar K. M. Ouda and Syed A. Raza- Waste-to-Energy: Solution for Municipal Solid Waste Challenges- Global Perspective, International Symposium on Technology Management and Emerging Technologies, issue May 2014
- [5] B N K Njoroge, M. Kimani and D. Ndunge- Review of Municipal Solid Waste Management: A Case Study of

Nairobi, Kenya, INTERNATIONAL JOURNAL OF  
ENGINEERING SCIENCES & RESEARCH  
TECHNOLOGY, ISSN(e): 2278-4721, ISSN(p):2319-  
6483, issue February 2014

- [6] Prof. M. R. Gidde, Prof. Dr. V. V. Todkar, Prof. K. K. Kokate - Municipal Solid Waste Management in Emerging Mega Cities: A case study of Pune City, Itulo Italia Conference On Green and Clean Environment, issue March 2008.

