Investigation and Analysis of SOLID WASTE MANAGEMENT SYSTEM OF PUNE MUNICIPAL CORPORATION

Dr. Surekha B. Mujumale

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Place: Pune **Mrs. Surekha B. Mujumale**

ABSTRACT

The motivation of this research has come from the gap identified in the literature review. Many research papers published on solid waste management in cities and also in solid waste management in Pune city. After reviewing it was observed that no social survey was conducted to find out various problems faced by the people residing near waste depot which was situated near Uali Devachi and Phursungi villages (near Pune Saswasd Road) and the problems faced by Pune Municipal Corporation while discarding solid waste in a large quantity.

In the year 2014 Pune city expanded in area with the additional of 36 villages in the peripheries of the city. There has been an increase of about 50% in the residential area. This rise has led to an increased pressure on the basic amenities. As increase in the total population of Pune city results in increase in the total waste generated in city.

Currently 1300 - 1400 MT solid waste is generated in Pune out of which 950 TPD reaches at landfill site at Urali Devachi, about 20 km away from Pune.

The PMC had started dumping solid waste at waste depot of Urali Devachi in the year 1991. Last since 25 years PMC is dumping solid waste here and all the villagers of Urali Devachi and Phursungi are facing many problems due to poor solid waste management and waste depot. The total environment in these villages is disturbed due to air, water and soil pollution.

There should be scientific method followed by Pune Municipal Corporation which will protect basic rights of human beings to get pollution free environment.

This research study is an attempt to find out possible solutions of the problem of solid waste generated in Pune city and try to suggest modifications in solid waste management system of PMC to satisfy the villagers suffering from Waste Depot of Pune Municipal Corporation.

This research study is with reference to villages situated nearby waste depot of Pune Municipal Corporation.

SCOPE AND LIMITATION OF THE STUDY

This research is studying Solid Waste Management System of Pune Municipal Corporation only. Researcher is focusing on various problems faced by Solid Waste Department of PMC. Researcher is trying to find out the problems faced by the villagers of Urali Devachi and Phursungi and also problems of employees working in solid waste dept. of PMC.

LIMITATIONS

This research study focuses only the problems faced by the villagers residing nearby Waste Depot of Urali Devachi and Phursungi and not studying problems faced by all citizen of Pune.

The Research work is undertaken to study Solid Waste Management System of Pune Municipal Corporation only and not other cities of Maharashtra.

OBJECTIVES OF THE RESEARCH STUDY

Based on review of literature and available information this research is undertaken with the following objectives:

1. To know about present status of solid waste management in urban area.
2. To study solid waste disposal system of Pune Municipal Corporation.
3. To know about the limitations of SWMS of PMC and problems faced by PMC while implementing solid waste management system.
4. To study various problems faced by the villagers of Urali Devachi and Phursungi where PMC Waste depot is installed and to know about their expectations .
5. To know about the various acts governing solid waste management system in Pune city and suggest expected amendments in it.
6. To find out possible solutions for the problems faced by PMC and the villagers of Urali Devachi and Phursungi
7. To know about future policy and programs for solid waste management system of Pune Municipal Corporation

HYPOTHESIS

The present study test the following Hypothesis.

a. Pune Municipal Corporation has developed and implementing proper solid waste management system to reduce, reuse and control solid waste generated in Pune city.

b. The villagers of Urali Devachi and Phursungi (where PMC Waste Depot is installed) are facing many physical and social problems due to poor solid waste management system of Pune Municipal Corporation.

c. The various acts governing Solid Waste Management services in Pune city are suggestive for creating a good social life of human being but the problem is in its effective implementation.

While collecting primary data survey method is adopted and to determine sample size and location of survey deliberate sampling method is used. While collecting information about ill effects of waste depot 1.5 Km area which is around the waste depot is selected for survey.

While collecting information from students; the school which is nearest and at 1.5 km distance from the waste depot is selected for survey.

This research is carried out with statistical analyses of actual data collected through surveys and personal interviews of different stakeholders. Total 271 families contacted while conducting survey of villagers affecting due to waste depot and information is collected from 53 students of 'Bhekaraimata School, Phursungi' which is just 1Km away from waste depot. Various Stakeholders contacted and interviwed during the research study such as Sarpanch of Urali Devachi and Phursungi, Members of Grampanchayat of both villages, Head of the Solid Waste Management Department of PMC, Manager of Waste Depot, Employees working in solid Waste Department (SWATCH Members collecting garbage), Doctors practicing at Urali Devachi and Phursungi, Principal of school, Chairman of 'Environment Protection Committee', Phursungi and Chairman of 'Kachra Depot Hatav Sangharsha Samiti' Urali Devachi.

For analysis and evaluation of the collected data statistical tools like averages, percentages, comparative charts are used. To present data collected different types of graphs are used like bar diagram, pie diagram and also prepared different comparative charts.

CONCLUSION

After detail research study and analysis it is concluded that the solid waste disposal methods at Urali Devachi Waste Depot (Mantarwadi) generate many environmental as well as health hazards within the surrounding area. It also causes harmful health effect on people living near Waste Depot. It also produces very bad smell at the time of decomposition process. At the time of decomposition it released a various gases within the surrounding area due to that air polluted which again results into global warming. All this gases e.g. SO2, CH4, CO2 etc. releases from waste depot are very harmful to human health.

Leachate formed from waste mixed with ground water and pollutes the water resources of villages. Villagers are not getting pure water for drinking. The dumping ground not only affect environment but also damage the property in the vicinity area. The current practices of PMC need to improve for managing waste scientifically.

Insect and rodent vectors are also attracted to the solid waste and may spread diseases such as cholera and dengue fever in the nearby area of waste depot. Adequate

infrastructure can help to tackle solid waste problem in city. For solid waste management comprehensive policies from household to the dumping ground are need to be followed.

Pune Municipal Corporation must undertake a programme to strengthen its capacity and institutional arrangement to handle all solid waste in the city. PMC can take help of NGO's, researchers, universities and colleges. Stakeholders' participation is essential to ensure a well managed system.

There is also need to conduct an education campaign on waste management and health related issues in school. This can be done by sending messages through radio, television, newspapers and hoarding about the advantages of clean city, such efforts will reduce the open waste and waste at storage sites.

There is urgent need of scientific planning of the solid waste collection at each household, collection points and easiest way of transportation up to land fill sites.

PMC can involve private sector in collection, transport and decompose of the solid waste in city. This will increase the coverage and collection capacity of the solid waste in city. Private sector has money to invest in machinery and transportation of solid waste etc. They can bring the modern machinery to collect solid waste in the city.

The PMC has to keep information system about population, waste created, stored etc. The updated information helps for planning and action of solid waste in city. Waste collected needs to be segregated into different types and decomposition of the dry waste require at the ward level. It will help to reduce the cost of collection and transport.

PMC must pass the strict laws and take immediate action against the households and commercial units which are throwing the waste at open sites. Punishment should be given to all those involved in such activities. In municipal budget, city planning solid waste management should be given more funds. For a growing metropolitan city like Pune, cleanliness must be given top priority.

ABBREVATIONS AND GlOSSARY

- **PMC -** Pune Munucipal Corporation
- **SWM -** Solid Waste Management
- **MSW -** Municipal Solid Waste
- **Anaerobic digestion -** means a controlled process involving microbial decomposition of organic matter in the absence of oxygen;
- **Biodegradable substance -** means a substance that can be degraded by micro-organisms;
- **Biomethanation -** means a process which entails enzymatic decomposition of the organic matter by microbial action to produce methane rich biogas;
- **Collection -** means lifting and removal of solid wastes from collection points or any other location;
- **Composting -** means a controlled process involving microbial decomposition of organic matter;
- **Demolition and construction waste -** means wastes from building materials debris and rubble resulting from construction, re-modelling, repair and demolition operation;
- **Disposal -** means final disposal of municipal solid wastes in terms of the specified measures to prevent contamination of ground-water, surface water and ambient air quality;
- **Generator of wastes -** means persons or establishments generating municipal solid wastes;
- **Land filling -** means disposal of residual solid wastes on land in a facility designed with protective measures against pollution of ground water, surface water and air fugitive dust, wind-blown litter, bad odour, fire hazard, bird menace, pests or rodents, greenhouse gas emissions, slope instability and erosion;
- **Leachate -** means liquid that seeps through solid wastes or other medium and has extracts of dissolved or suspended material from it;
- **Municipal authority -** means Municipal Corporation, Municipality, Nagar Palika, Nagar Nigam, Nagar Panchayat, Municipal Council including notified area committee (NAC) or any other local body constituted under the relevant statutes and,

where the management and handling of municipal solid waste is entrusted to such agency;

- **Municipal solid waste -** includes commercial and residential wastes generated in a municipal or notified areas in either solid or semi-solid form excluding industrial hazardous wastes but including treated bio-medical wastes;
- **Processing -** means the process by which solid wastes are transformed into new or recycled products;
- **Recycling -** means the process of transforming segregated solid wastes into raw materials for producing new products, which may or may not be similar to the original products;
- **Segregation -** means to separate the municipal solid wastes into the groups of organic, inorganic, recyclables and hazardous wastes;
- **Storage -** means the temporary containment of municipal solid wastes in a manner so as to prevent littering, attraction to vectors, stray animals and excessive foul odour;
- **Transportation -** means conveyance of municipal solid wastes from place to place hygienically through specially designed transport system so as to prevent foul odour, littering, unsightly conditions and accessibility to vectors;
- **Vermicomposting -** is a process of using earthworms for conversion of bio-degradable wastes into compost.
- **Environment -** includes water, air and land and the interrelationship which exits among and between water, air and land, and human beings, other living creature, plants micro organism and property;
- **Environment pollutant -** means any solid, liquid or gaseous substance present in such concentration as may be, or tend to be injurious to environment.
- **Environment pollution -** means the presence in the environment of any environmental pollutant.
- **Hazardous substance -** means any substance or preparation which by reason of chemical or physic-chemical properties or handling, is liable to cause harm to human beings, other living creature plants and micro-organism, property
- **Occupier -** in relation to any factory or premise, means a person who has control over the affairs of the factory or the premises and includes, in relation to any substance, person in possession of the substance;

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Dr. Surekha B. Mujumale has 25 years teaching experience. She is a well qualified faculty with Ph D in Commerce (Business Administration), M. Phil, M. Com, B. Ed. At present she is working as an Assistant Professor at STES's Sinhgad College of Science, Ambegaon Bk. Pune - 411046 affiliated to Savitribai Phule Pune University and also holding the responsibility as the Coordinator of B. Com course. She is specialized faculty in banking, management, marketing and finance.

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