

The Current Legal Framework For Solid Waste Management In India And U.S.

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Abstract :-

Environmental pollution is vast problem in the world. Today is need to protect and improve the environment issues in human being which is increasing global warming and climate change and impacts the entire planet. Non-compliance and Improper of solid waste management deteriorates many public healths, degrades quality of life and pollutes air, water and land resources. Without proper performance of solid waste management is also identified several human diseases and result in numerous premature deaths every year.

Famous case of Dr. B. L. Wadhwa Vs Union of India in 1996 and the case of the writ petition filed by Almitra H. Patel in 1998, the Supreme Court of India judgment issuing several directives to Urban Local Bodies for proper conduct of solid waste in cities. The Supreme Court of India is also emphasized “Right of citizen of India to live in a clean city and emphasized the statutory obligation of Municipal Corporation for efficient management of solid waste of the cities”.

The United Nations Conference on Human Environment held in Stockholm in June, 1972 in which nations was observed “to protect and improve the human environment and for the prevention of hazardous to human beings and other living creatures, plant and property”.

Goals and Principles of Municipal Solid Waste Management are as under:-

- 1. To protect the health of the Urban Population who are suffering from proper inefficient management in developing countries in which is also India.*
- 2. To promote environmental conditions in which are includes global warming, global cooling, green house effects etc.*
- 3. To supports urban economic development by well management of solid waste.*

Principles of Municipal Solid Waste Management are as under:-

- 1. It should be minimize waste generation of solid waste*
- 2. It should be maximize waste recycling and reuse of solid waste*
- 3. Ensure the safe and environmentally sound disposed of waste by scientifically and well technologies. (Peter, S)*

Solid waste management in India as well as U.S., U.K. and others developed and developing countries are seriousness problem for environment issues. 90 percent of total solid waste is disposed of unscientifically in open dumps and landfills from which creating problems to public health and defect to human being.

Keywords: - Law of Environment, Indian Municipal Solid Waste Management, RCRA in US and various pollution of air, water and land resources.

Introduction:-

Basel Convention, 1992 on the control of trans-boundary movements of Hazardous Wastes and their disposal, usually known as the Basel Convention. According to Article 4, “Basel Convention calls for an overall reduction of waste. The waste is substances which are to be disposed by national law”.

At the 1992 Rio Conference, Agenda-21 is famous plan for the world, which is to be adopted the agenda as a globally, nationally and locally government in which more than 170 States of United Nation Organization are adopting. Main focus of Agenda 21 was based on sustainable development and production, reduction, degradation and pollution.

A gentleman said that “Waste is not a waste, if they know to use the waste”. It is important issues, if prevent and minimize the waste and maximize reuse as well as recycling and reduce of waste. Agenda 21 provides improve resources efficiency with financial and technical for developing countries.

According to **Municipal Solid Waste (Management and Handling) Rule, 2000 of India**, Rule 3 (xv) is defined the Municipal Solid Waste includes commercial and residential wastes generated in a municipal or notified areas in either solid or semi-solid from excluding industrial hazardous wastes but including treated bio-medical wastes.

It means commercial and residential waste is as under:-

Residential wastes: Food wastes, paper, plastic, paper, cardboard, textiles, leather, wood, yard wastes, metals, glass, ashes etc.

Commercial wastes: Housekeeping wastes, packing food, paper, cardboard, plastic, wood, food, glass, construction and demolition hazardous wastes special wastes etc.

Bio-medical wastes: Old medicine, hospital waste such as cloth, soiled with blood and other death bodies etc.

Solid waste commonly is known as **trash or garbage (U.S.) and refuse or rubbish (U.K.)**. That means a waste type consisting of everyday items. Trash and garbage are sometimes collected separately from the public.

According to Reserve conservation and recovery Act,1976 (US) - Solid waste means any garbage, refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded materials including solid, liquid, semi-solid, or contained gaseous material, resulting from industrial, commercial, mining and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject to permit under 33 USC 1342, as amended (86 Stat. 880), or source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923) except as may be provided by existing agreements between the State of New

York and the government of the United States (see section 360-1.3 of this Part).

Waste can be consisted any elements i.e. solid, liquid, gaseous or semi-solid. Solid wastes are as tires, garbage, metal, paints, furniture, oil and anti-freezes, appliances and vehicles etc.

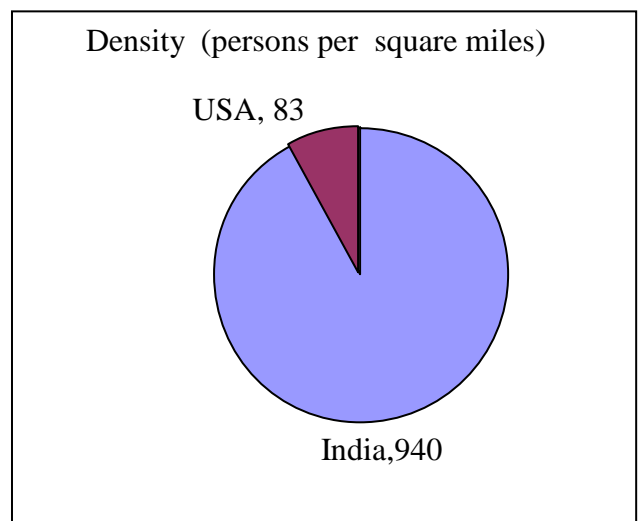
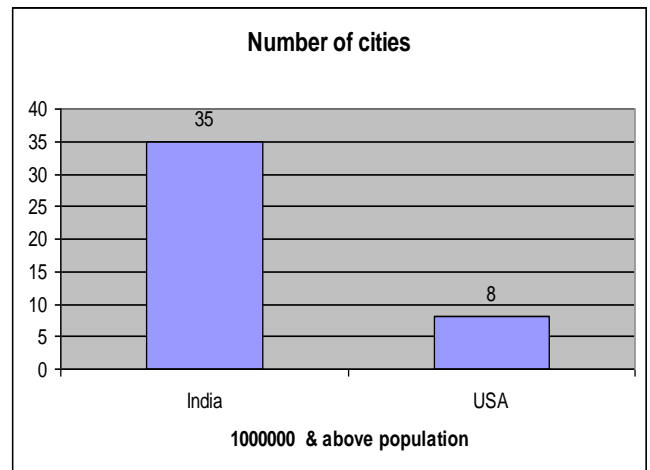
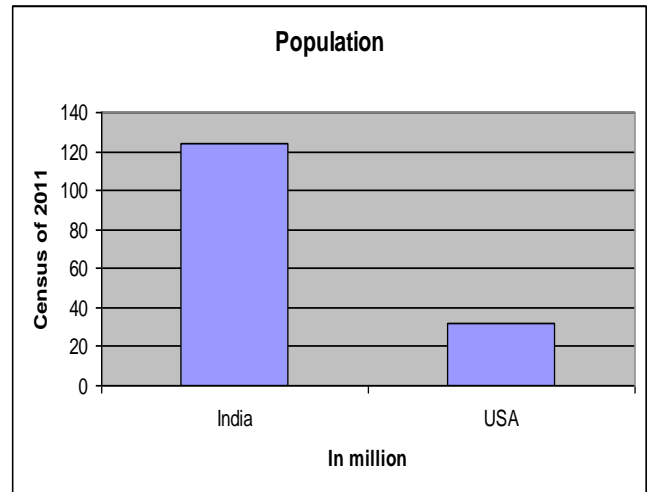
Solid Waste Policy in the United States:-

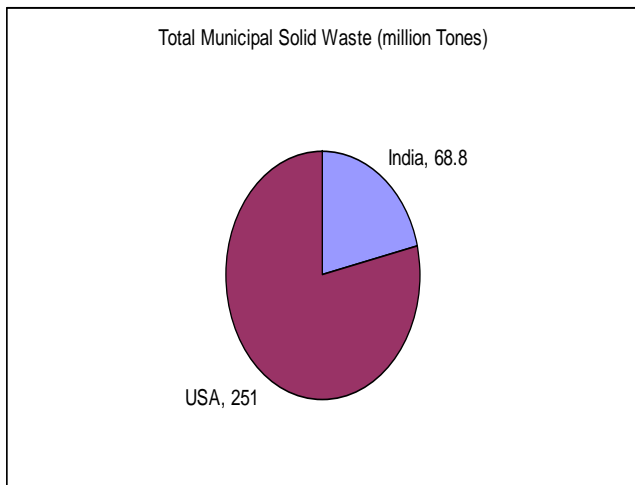
Main object of policy is to developing and implementing proper mechanisms to effectively manage solid waste. Policy of United States always promote to be effective from citizens of United States, householders, businessmen, Non Government Organization, Institution, Universities, Research Scholars etc.

Methodology:-

1. Municipal Solid Waste Management generation in India and USA			
No.	Particulars	India	USA
1	Population	1.24 billion (124 million)	31.8 million
2	1000000 and above cities	35	8
3	Density	940 persons per square miles	83 persons per square miles
4	Total Solid Waste (Before recycling)	68.8 million Tones	251 million Tones

Census of India, 2011 and United States census Bureau, data 2011





India is the second largest country population in the world. The census of 2011 estimates 1.24 billion population lives in India. Population of India is as much as the combined population of Bangladesh, USA, Indonesia, Brazil, Pakistan and Japan. But USA is third populated country in the world which is 31.8 million populations. Density of India is also largest which is 940 persons per square mile but density of USA is 83 persons per square mile. 35 metropolitan cities consist in India and 08 metropolitan cities in USA. 251 million tones of Municipal Solid Waste generate in USA and 68.8 million tones generate in India. 500 grams (0.5 Kg) per capita per day generate in India but 4.38 pounds (0.45 Kg) per capita per day generate in USA. In the case of generation of solid waste are equal in India and USA.

Kolkata, Mumbai, Delhi, Chennai, Hyderabad and Bengaluru are six metro cities of India whereon 48000 tone per day (17.5 million tone per year) generate municipal solid waste. India has more than 53 cities whereon population is greater than 1 million where solid waste

generates 86245 tones per day (31.5 million tones per year) in which 46% of total solid waste generate in urban areas. The remaining 313 cities whereon population is rather than 1 million where solid waste generates 15.7 million tones per year (43000 tones per day) whereon 23% of the total urban generate the municipal solid waste.

The six metro cities New York, Losageles, Chicago, San Francisco, Houston and Phoenix generate about 50% of Municipal Solid Waste of total Municipal Solid Waste of USA. New York State Association for solid waste management is an oldest and largest statewide solid waste organization was founded with a mission to promote efficient, effective and environmentally solid waste management practice in New York. San Francisco is targeted the goal for Zero State Solid Waste Management of San Francisco till year of 2020.

2. Generated Municipal Solid Waste in USA		
No.	Solid Waste	Percentage
1	Paper	31.0
2	Food Scraps	12.7
3	Wood	6.6
4	Yard Trimmings	13.2
5	Rubber, leather and Textiles	7.9
6	Plastic	12.0
7	Metal	8.4
8	Glass	4.9
9	Others	3.3

EPA of USA, 2007

Municipal solid wastes are collected by Urban Local Authorities of USA in which papers as a solid waste are greater than other solid wastes. Paper generates 31 percent as well as Yard trimmings 13.2 percent, Food scraps 12.7 percent, Plastic 12 percent and minimum solid waste is glass, wood and others.

Plastic in India is more than 20 percent of total solid waste are collected which is a world record. Although legal provisions may be enforced in the Federal law and respective State law but they do not exist with suitable modification against polluter of plastic solid waste. Wherever look wherever you can get the plastic. No person shall thrown upon or deposit any public street, public place and land.

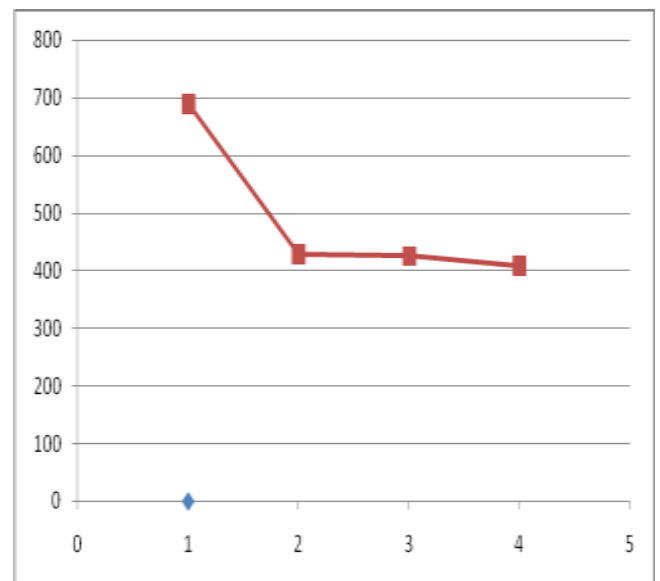
In June 2013, Supreme Court of India has directed to Government of India, Central Pollution Control Board and State Pollution Control Board for proper conduct of plastic solid waste. Plastic solid waste generates 56 million tones of plastic waste annually in which Delhi accounting for a staggering about 690 tones a day.

Central Pollution Control Board is informed to bench of Supreme Court that “total plastic solid waste which is collected, segregated and recycled in the India is estimated to be 9205 tones per day and 6137 tones remain uncollected and littered which is approximately 40 percent of total plastic solid waste.

According to Central Pollution Control Board, plastic solid waste are produced in other metropolitan cities under as follow –

3. Plastic Solid Waste in India		
No.	Metro Cities	Collected the plastic solid waste (tones a day)
1	Delhi	689.5
2	Chennai	429.4
3	Kolkata	425.7
4	Mumbai	408.3

Report on (2010) Municipal Solid Waste, Central Pollution Control Board (India),



1=Delhi, 2=Chennai, 3=Kolkata and 4=Mumbai

Above figures only save to confirm the common sight of mounds of plastic in Industrial, Residential and Slum areas of Indian cities and towns.

Delhi, Agra, Jaipur, Faridabad and Bangluru are baned on gutka, pan masala mixed with chewing tobacco and nicotine. Supreme

Court of India emphasized that felt non implementation of law due to abject failure of governance at the grass-root level. They are directed to Central and State Pollution Control Board for proper conducting and supervising of plastic solid waste. The Supreme Court of India asked to Pollution Control Board to furnish the report they have been mandated under law to prepare as supervisions of plastic solid waste disposal by Urban Local Bodies.

4. Degenerate of Solid Waste	
Types of solid wastes	Approximate time it takes to degenerate
Organic waste such as vegetable and fruit peels leftover food stuff etc.	1-2 weeks
Paper	10-30 days
Cotton cloth	2-5 months
Woolen items	1 year
Wood	10-15 years
Tin, Aluminum and other metals	100-500 years
Plastic	1 million years
Glass	Undetermined the times

Case study on Municipal Solid Waste Collection and Transportation-New Delhi Municipal Council, 2010

Plastic is a degradable solid waste and Plastic easily can be made but can not be destroyed in own time. Modern time, we use in packing, food, tableware, bags etc. Degradable plastic clearly are designed to address the end-of-life of plastic products which reduce the environment impacts associated with their use and management and mismanagement so that we shall be observed how to prevent the environment impacts. I think to promote the use of Jute or Paper bags rather than plastic bags from which will be reduced the environmental pollution. We will be more recycled plastic solid waste.

Law Enforcement for Solid Waste Management in India:-

In India, Ministry of Environment and Forest, Government of India notified the Municipal Solid Waste (Management and Handling) Rules, 2000 for proper conduct of solid waste. Rule-2 provides Indian Municipalities of urban areas have overall responsibility for solid waste management in their cities. Management and Handling means proper collection, segregation, storage, transportation, processing and disposal of municipal solid waste.

The rules contain four schedules namely;

No.	Schedules	Rules contains
1	Schedule I	It is related to implementation schedule
2	Schedule II	Procedure of collection, segregation, storage, transportation, processing and disposal of municipal

		solid waste.
3	Schedule III	Procedure for Landfill, mode of site selection and facilities in sites. Monitoring to the pollution i.e. air, water quality, land resources, plantation at land fill site etc.

4	Schedule IV	Indicate waste processing options including standards, treated and incinerations.
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Authorities and Responsibilities for solid waste management:-

No.	Agencies and Authorities	Responsibility
1	Municipal Authorities	<ul style="list-style-type: none"> i. Ensuring that municipal solid wastes to be handled as per rules ii. Seeking authorization from State Pollution Control Board for setting up waste processing and disposal facility including land fills iii. Furnishing annual report. iv. Complying with Schedule I, II, III and IV of the rules.
2	<p>State Government :</p> <ul style="list-style-type: none"> i. Secretary in Charge of Department of Urban Development ii. District Magistrate 	<p>Overall responsibility for the enforcement of the provisions of the rules in the metropolitan cities</p> <p>Overall responsibility for the enforcement of the provisions of the rules within the territorial limits of their jurisdiction.</p>

3	Central Pollution Control Board	<ul style="list-style-type: none"> i. Co-ordinate with State Boards and Committees with reference to implementation and review of standards and guidelines and compilation of monitoring data. ii. Prepare consolidated annual review report on management of municipal solid wastes for forwarding it to Central Government along with its recommendations before the 15th of December every year. iii. Laying down standards on waste processing and disposal technologies including approval of technology.
4	State Pollution Control Board	<ul style="list-style-type: none"> i. Monitor the compliance of the standards regarding ground water, ambient air quality and the compost quality including incineration standards as specified as specified under Schedule II, III and IV ii. Issuance of authorization to the municipal authority or an operator of a facility stipulating compliance criteria and standards iii. Prepare and submit to the Central Pollution Control Board an annual report with regard to the implementation of the rule.

Report on (2010) Municipal Solid Waste, Central Pollution Control Board (India)

According to Reports on Central Pollution Control Board, Government of Environment and Forest Ministry- However most of them are currently unable to fulfill their duty to ensure environmentally sound and sustainable ways of dealing with waste generation, collection, segregation, storage, transportation,

processing and disposal of municipal solid waste accordance management of solid waste. 65 Municipalities are sampled by Central Pollution Control Board under as follow:-

- 1. Definition of Collection under Rule 3:-**
Collection means lifting and removable of solid waste from collection points or any other location.

Implementation of Collection: -

Municipal solid waste is regularly collecting only in 22 – 25 percent of the sampled Municipalities of India.

2. Definition of Segregation under Rule 3:-

Segregation means to separate the solid wastes into the groups of organic, inorganic, recyclables and hazardous waste.

Implementation of Segregation: -

Segregation of solid waste took place only 10 percent of the sampled Municipalities of India.

3. Definition of Storage under Rule 3:-

Storage means the temporary containment of municipal solid wastes in an manner so as to prevent littering, attraction to vectors, stray animals and excessive foul dour.

Implementation of Storage:- only 17 percent municipalities are able to ensure proper storage of waste.

4. Definition of Transportation under Rule

3:-Transportation means conveyance of municipal solid wastes from place to place hygienically through specially designed transport system so as to prevent foul dour, littering, unsightly conditions and accessibility to vectors.

Implementation of Transportation: -

Covered trucks (Transportation vehicles) for transportation of municipal solid waste are being used only in 18 percent of sampled Municipalities of India.

5. Definition of Processing under Rule 3:-

Processing means the process by which solid wastes are transformed into new or recycled products.

Implementation of Processing:-only 11

percent municipalities has waste processing capabilities in India.

6. Definition of Disposal under Rule 3:-

Disposal means final disposal of municipal solid wastes in terms of the specified measures to prevent contamination of ground waster, surface water and ambient air quality.

Implementation of Disposal: - only 6

municipalities out of the sampled 65 municipalities have established a landfill, leading to dumping of waste in open dumpsites in the States. The activity outlined in the implementation schedule for the development of landfills was carried out only in 14 percent of the sampled Municipalities of India.

Accordance to Handling of municipal solid wastes is effective less strategies of three “Re” formula in which Reuse, Reduce and Recycling. Only 8 percent of sampled municipalities are implementing the 3Re.

Law Enforcement in USA for Solid Waste Management:-

Main motto of USA for Environmental Protection specially Solid Waste Management

is clear cut emphasized “Zero waste in the recycling of all materials back into nature or the marketplace in a manner that protects human health and the environment.”

Environmental Laws and Regulations in USA is enforced Resource Conservation and Recovery Act, 1978 (RCRA) as known as Solid Waste Disposal Act, 1976. Environmental Protection Policy in USA is as Federal Law which is legislation law. More legislation in USA is as a Code law. US Code, Title-42, Public Health and Welfare is enforced Environmental Statutes and Chapter-82 of Title-42 of US Code is provided Solid Waste Disposal Act. This Act is preferred to RCRA. RCRA gave Environmental Protection Act (EPA) authorized to control hazardous waste from the “cradle-to-grave” in which provided to generation, transportation, treatment, storage and disposal of solid waste.

Second law enforcement for solid waste is HSWA which is the Federal Hazardous and Solid Waste Amendments, 1984 in which RCRA that required phasing out land disposal of hazardous waste.

Landfill sites for Municipal Solid Waste in India :- Municipal Solid Waste (Management and Handling) Rule, 2000 Provides specifications for landfill sites for solid waste under Schedule-III which is under as follow –

1. Site Selection:-It is important part for landfill sites. Selection of landfill sites shall be based on examination of environmental issues. Paper

documentation of a phased construction plan as well as a closure plan. The existing landfill sites which continue to be used for more than 5 years. Bio-Medical waste shall be disposed off in accordance with Bio-medical waste (Management and Handling) Rule 1998. Hazardous waste shall be managed in accordance with Rule of 1989. The landfill site shall be large enough to last for 20-25 years. The landfill site shall be away from habitation clusters, forest areas, water bodies monuments, National parks, wetland and places of important cultural historical or religions interest. Landfill site shall be away from airport or airbase. Necessary approval of airport or airbase, where the site is to be located within 20 km of an airport.

2. Facilities at the landfill sites:-Proper gate to monitor incoming vehicles or other mode of transportation. Well protected to prevent entry of un-authorized persons and stray animals. Approach and other internal roads for free movement of vehicles and other machinery shall exist at the landfill sites. Drinking water for workers and lighting arrangements for easy landfill sites. Maintaining purpose for drinking water quality shall apply value of PH and air quality at the landfill sites.

Landfill sites in USA:- Federal regulations are provided modern landfills which is well developed facilities and located, designed and monitored. Landfill must be designed to protect the

environmental issues where are arranged sitting plan in which can be seen monitoring the groundwater and air pollution. Landfill receive municipal solid waste from household waste as well as industrial waste, hazardous waste and construction waste are dumped in landfill sites. Federal Regulation are restricted to the landfill areas. Location restrictions, composite liners requirements, leachate collection and removal systems, operating practices, groundwater monitoring requirements, closure and post closure care requirements, corrective action provisions and financial assurance are provides. Some material may be banned from disposed solid waste i.e. paints, chemicals, motor oils and batteries etc.

Sanitary Landfill under RCRA :-

- (1) **Avoid landfill sites:** Swampy area, Flood plains, Coastal areas etc. and Fractures or Porous rocks.
- (2) **Prefer Sites :** Clay layers

Monitoring of Sanitary Landfills under RCRA :-

- (1) **Gases:** Methane, Ammonia, Hydrogen, Sulfide etc.
- (2) **Heavy Metals:** Lead, Chromium in soil.
- (3) **Soluble Substances:** Chloride, Nitrate, Sulfate etc.
- (4) **Surface Run:** Offs

(5) **Vegetation:** May pick up toxic substances

(6) **Plant Residue in soil**

(7) **Paper/Plastic etc:** Blown by the wind.

Incineration:-Solve space problem but:

- (1) Produces toxic gases like Chloride, Hydrogen Chloride, Hydrogen Cyanide, Sulfur die oxide.
- (2) Heat generated can be covered % of waste burnt: Japan 67%, Switzerland 80%, USA 6% and India above 80%.
- (3) Generated to energy by incineration.

Reducing Waste:-

- (1) **Incineration, Compacting**
- (2) **Hog feed** – requires heat
- (3) **Composing** – requires separation of organic from glass and metals.

Recycling and Reusing:-

- (1) **Recycle of glass containers** – 5 million tones
- (2) **Plastic** – marked by types for easy recycling
- (3) **Converted into** fibers, trash bags, plastic lumber, fill for pillars, insulation etc.
- (4) **Junked cars** – 150-200 kg of plastics to be recycled.

Observation of research paper: - Urban Local Bodies in India governed to federal

and state governments by law enforcement. State laws should be provided incorporate suitable provision for the public participation and solid waste management services. It is necessary part of management of solid waste in urban areas. State Laws did not provide any type of penalties for misconduct management of solid waste. State has not given the adequate power to the local bodies for punishing the offenders so that environmental pollution are increasing by municipal solid waste. Municipal Solid Waste (Management and Handling) Rule, 2000 provides the monitoring responsibility to Central and State Pollution Control Board for efficient and proper management of solid waste but they are not proper monitoring. Worker does not follow the rules and collect the mixed waste and dump in empty land sites. Proper collection and segregation is necessary for solid waste management. Worker temporary storage of organic solid waste where door to door collection of recyclable waste is not practiced. Solid waste disposed in open spaces with the organic, inorganic and bio-medical solid waste from which is increasing environmental pollution in urban areas.

(1) No organized system for collection, segregation, transportation and disposal and recycled of municipal solid waste in urban area by the Urban Local Bodies of India from which

Solid Waste Management Sector has affected and service level are complicated.

(2) Municipal Solid Waste Management of India has poor system for solid waste resulting it into unhygienic condition in major and minor cities of India.

(3) Solid Waste disposal sites inadequate. Further solid waste has forced to dump in open lands and water bodies from which environmental pollution are created as static position in India.

Suggestion of Researcher:-

1. Urban Local Bodies is responsible for providing the services. This responsibility should be made well planning and design, construction and operation for maintaining the proper management system.
2. Municipal Solid Waste Management of India should be made the goal for protecting the health of the urban population who suffer most from poor waste management and promote the environmental condition of India as well as to support urban economics development by providing demanded waste management servicing.
3. India should be adapted to Municipal Solid Waste Management of USA in which minimize waste generation and maximize waste recycling and reuse

and environmentally sound disposal systems.

4. India should be made to support the efficiency and productivity of the economy from which will be increased employment and income of citizen of India.
5. Manual handling of solid waste shall be prohibited and to promote scientifically handling system. Municipal Authority shall adopt suitable technology or combination of such technologies to make use of wastes so as to minimize burden on landfills.
6. Waste stored are not exposed to open atmosphere and shall be aesthetically acceptable and user friendly. Vehicles used for transportation of waste shall be covered and waste should not be visible to public nor exposed to open environment preventing their scattering.
7. Government, Central Pollution Control Board or State Government should be organized awareness program for public and organized training program for their employees. Workshop and Seminar is best awareness program for adopting the rules and regulations. Government should be encouraged to Research Scholars, Researchers and Professors of Universities for searching the Management of solid

waste. Training program are organized in the form of awareness camps such as anti-malarial and health program for public at least 1-2 camps per year in which staff members should be part of the training and other programs.

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