

## **7. Solid Waste Management**

### **7.1 Present Status**

Solid waste management services were taken over by NMMC from CIDCO on May 1, 1997, for CBD-Belapur, Nerul, Turbhe-Sanpada, Vashi, Koparkhairane and Airoli nodes. NMMC also looks after solid waste collection from 43 villages from former grampanchayat areas.

Solid waste management is looked after in 81 zones through private contractors. As per the guidelines of Honourable Supreme Court of March 1999 and Municipal Solid Waste (Management & Handling) Rules September 2000, solid waste management system has been reorganized. Accordingly, norms were formulated as 700 running meters road sweeping and 500 running meters of drain cleaning per worker. Areas have been allotted to the workers. A comprehensive contract to this effect has been started operating since long.

NMMC has taken over Thane Belapur Industrial area of MIDC from November 2004 and is providing SWM services in MIDC areas. This has increased 4 zones making total zones 85.

Domestic solid waste from house to house in NMMC area is collected and loaded in refuse transportation vehicles manually by sweeping contractors. There are minimum possible refuse bins on footpaths of roads in NMMC.

NMMC proposes to collect domestic solid waste (wet & dry separate as per MSW rule 2000) from NMMC area with Mechanical compactors in 2007-08 (5MT, 6MT & 7 MT capacity).

From NMMC area about 489 MT solid waste is collected per day on an average. This waste is transported to sanitary landfill, weighed and treated with the help of culture for bio-stabilisation. Manure is separated and rejects are disposed in sanitary landfill developed at Turbhe. While disposing solid waste, AFM is sprayed to minimize fly and odour nuisance. The operation & management of sanitary landfill is given to private contractor. The sanitary landfill is protected from stray dogs and unauthorised dumping. This dumping ground is inaugurated on 26 th January 2005.

Presently sweeping, collection and transportation is looked after Health department. Sanitary landfill construction including other allied projects, Vehicles maintenance and O & M is looked after civil engineering department.

As per the due directions of honourable Supreme Court and Municipal Solid Waste (Management & Handling) Rules 2000 made under the provision of Environmental Protection Act, 1986 under section (3) (6) (25) NMMC reorganised Solid Waste Management as follows-

- (i) Segregation of garbage at source- Necessary Bylaws made under section 458 (20) (48) of BMC Act 1949 , according to which garbage generator is bound to segregate garbage at generation point.
- (ii) Garbage littering on road is totally prohibited and hence NMMC shall set up special nuisance detection Squad.
- (iii) An integrated comprehensive tender is under consideration for door to door collection and transportation of garbage. According to which house to house garbage collection from the residential and commercial societies is implemented. There shall be no bins on the road in this system. Dry garbage and wet garbage shall be separated at source.
- (iv) Segregated garbage i.e. biodegradable garbage shall be used for waste energy generating project as well as for preparation of organic manure.
- (v) MPCB has authorised dumping ground at Turbhe. NMMC has developed infrastructure for sanitary landfill as per MSW Rules-2000 at Turbhe site. Salient features are given in Table 7.1.1
- (vi) NMMC has awarded comprehensive contract as per MSW Rule-2000 for collection, transportation and disposal of bio-medical waste.
- (vii) NMMC has awarded sanitary landfill O & M operation as performance based comprehensive contract as per MSW Rule-2000
- (viii) NMMC has put up informative hoardings on segregation of dry garbage and wet garbage at various places for guidance of citizen and also appointed advertising agency for public awareness.
- (ix) Dumping at Koparkhirane has been closed from May 2005 and shall be scientifically closed as per provision of MSW Rule-2000. The extent work completed in 2006-07 is 40%.

## **7.2 Status of Environmental Quality**

### **Solid Waste Management**

The sources of solid waste in NMMC area are domestic waste and vegetable market waste. Sampling and analysis of solid waste was carried out during May 2007 (Table 7.2.2 a & b). It was found that the composition of the

waste varies across NMMC. The major components of the waste are papers, coconut shells, and vegetable wastes. Composition of glass and metal pieces was found negligible. This indicates good level of recycling. At some places 10 % of waste was plastic waste. This is alarming and needs appropriate measures.

In view of good percentage of biodegradable components in waste, NMMC proposes to set up 500 TPD capacity of MSW processing plant for manure and Refuse Derived Fuel (RDF) production on BOOT basis.

**Table 7.2.1: Quantity of Solid Waste**

<b>S.No</b>	<b>Category</b>	<b>Nos of Vehicles</b>	<b>Net Wt, MT</b>
1	Ghantagadi	180	489
2	NMMC RC/DP	-	-
3	APMC	12	46
4	CIDCO	16	60
5	MIDC RC/DP	4/5	37
6	Others	3	2.6
	<b>Total</b>	<b>215</b>	<b>634.6</b>

(Dated-14-06-2007)

**Table 7.2.2: Composition of Solid Waste**

**(a): Physical Characteristics**

<b>Physical characteristics (%basis)</b>	<b>Turbhe DG May-2007</b>	<b>Ghanta gadi Belapur</b>	<b>Ghanta gadi Karave</b>	<b>CIDCO New Panvel</b>	<b>Mahpe MIDC</b>	<b>Rabada MIDC</b>	<b>Turbhe MIDC</b>
Paper	8.3	13.91	17.10	4.83	4.74	15.71	6.06
News Papers	2.0	7.39	3.94	11.29	10.16	5.71	3.03
Plastic waste	1.5	7.39	13.15	6.45	18.64	21.42	20
Coconut shells	2.0	2.17	2.63	6.45	-	1.42	6.06
Vegetable & Non vegetable Waste	54.1	60.86	7.89	58.06	20.33	4.28	6.06
Cloth Waste	5.2	2.17	-	3.22	10.16	1.42	7.27
Rubber Waste	-	-	2.10	-	-	-	3.03
Glass	2.00	1.74	-	-	1.69	5.71	-
Metals	-	-	-	-	3.38	2.85	3.03
Debris	14.5	2.17	41.31	6.45	23.72	32.85	42.42
Grass/Dry leaves	10.4	2.17	11.84	3.22	6.77	8.57	3.08

**(b) : Heavy Metals**

<b>Heavy Metals</b>	<b>Resid ential Zone Belapur</b>	<b>Resid ential Zone Belapur</b>	<b>Resid ential Zone Nerul</b>	<b>Resid ential Zone Nerul</b>	<b>Resid ential Zone Vashi</b>	<b>Resid ential Zone Vashi</b>
Lead mg/kg	0.42	0.45	0.61	0.32	2.01	2.0
Arsenic mg/ kg	N.D	N.D	N.D	N.D	N.D	N.D
Mercury mg/kg	0.2	N.D	N.D	N.D	3.42	2.85
Nickel mg/kg	N.D	15.2	18	4	N.D	N.D
Iron mg/ kg	150	212.0	281.0	218.0	112	150
Copper mg/ kg	6.2	0.52	0.49	0.28	34.0	24.1
Cadmium mg/ kg	N.D	N.D	N.D	N.D	N.D	N.D
Chromium mg/ kg	0.31	N.D	0.56	N.D	0.32	0.31
Zinc mg/kg	13.8	0.01	N.D	N.D	22.91	N.D

Note: N.D. - Non Detectable

**(c) : Chemical Characteristics of Solid waste Dumping Site Koparkhairne**

<b>Parameter</b>	<b>Value</b>
Carbon	21.86-29.60 %
Volatile substance	50-54.81%
Non Volatile substance	45.1-51 %
Moisture content	36.86-52.83 %
PH	7.7
Na	2.5-4.8 mg/l
K	0.058-3.7 mg/l
P	0.35-1.025 mg/l
TKN	785 mg/l
Hg	N. D.
Arsenic	N. D.
Calorific value	4625 cal/Kg

**Table 7.2.3: Turbhe Municipal Solid Waste Landfill Station  
Leachate Analysis Report: May – 2006**

Parameters	Sample 1	Unit
PH	6.8	-
DO	ND	mg/l
Chemical Oxygen Demand	3600	mg/l
Biochemical Oxygen Demand	1506	mg/l
Chloride as Cl	16540	mg/l
Sulphate	24650	mg/l
Total Hardness	4380	mg/l
Total Kjeldahl's Nitrogen	378	mg/l
MPN Count Fecal Coliform	520	MPN /100ml
F Coli	15	mg/l
E Coli	9	mg/l

Sample collected by laboratory on 25.06.2007

N.D. : Not Detectable

**7.3 Actions Taken / Proposed by NMMC for Environmental Projects**

Department	Environmental related projects	Remarks
CE	Set up a plant 500 MT of processing of MSW on BOOT basis	Under implementation
CE	The Scientific closure of Koparkhairane dumping ground.	Under implementation
CE	Carbon Credit from first phase sanitary landfill of Turbhe dumping ground	Proposed in 2007-08
DNC	Debris Detection Mobile Squads	Under implementation
CE	III rd stage of Sanitary Land Fill.	Proposed in 2007-08