

PROFORMA FOR SUBMITTING INFORMATION ON SOLID WASTE MANAGEMENT

Name of City/Town:	BHOPAL	District:	Bhopal
Name of Municipal Body:	Bhopal municipal corporation	Division:	Bhopal
Address:		State:	Madhya pradesh
Telephone:	30871 – 74	Fax:	
Email:		Website:	
<ul style="list-style-type: none"> <li>• <b>DEMOGRAPHY</b></li> </ul>			
.1	Name of Officer In-Charge	Municipal Commissioner	
.2	Area of Municipal Corporation /Council (Please provide map showing legal limits of municipal body) (km <sup>2</sup> )	285.88 sq.km	
.3	No. of wards / zones	66 wards	
.4	Total population (as per 1991 census)	106,000	
.5	Total population (as per 2001 census)	150,0000	
.6	Population		
	<ul style="list-style-type: none"> <li>• Urban</li> </ul>		
	<ul style="list-style-type: none"> <li>• Slums</li> </ul>	22,5000	
.1	Floating population		
.2	Total no. of household		
.3	Average maximum temperature (°C)	41 <sup>0</sup> c	
.4	Average minimum temperature (°C)	20.5 <sup>0</sup> c	
.5	Average yearly maximum rainfall (mm)	1159 mm	
.6	Average maximum humidity		
.7	Average minimum humidity		
.8	Average depth of water table		
.9	Altitude ( <i>i.e.</i> mean sea level)		

<ul style="list-style-type: none"> <li><b>GENERATION OF MUNICIPAL SOLID WASTE</b></li> </ul>		
.1	Total MSW generation (MT/day)	600 MT/day
.2	MSW generation (gms/capita/day)	
.3	Of the total MSW generated	
	<ul style="list-style-type: none"> <li>Quantity of domestic MSW (MT/day)</li> </ul>	
	<ul style="list-style-type: none"> <li>Quantity of commercial MSW (MT/day)</li> </ul>	
	<ul style="list-style-type: none"> <li>Quantity of industrial (non-toxic and non-hazardous) waste (MT/day)</li> </ul>	
	<ul style="list-style-type: none"> <li>Quantity of waste from markets (MT/day)</li> </ul>	
	<ul style="list-style-type: none"> <li>Quantity of waste from hotels and restaurants (MT/day)</li> </ul>	
.1	Composition of MSW (Attach separate sheet)	
	<ul style="list-style-type: none"> <li>Physical characteristics</li> </ul>	
	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Biodegradable (%)</li> <li>Paper (%)</li> <li>Plastic (%)</li> <li>Glass (%)</li> <li>Metal (%)</li> <li>Inert, ash, debris (%)</li> </ul> </li> </ul>	52.44 8.5 3.5 1.0 1.5 30
	<ul style="list-style-type: none"> <li>Chemical characteristics</li> </ul>	
	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Carbon (%)</li> <li>Nitrogen (%)</li> <li>Phosphorous as P<sub>2</sub>O<sub>5</sub> (%)</li> <li>Potassium as K<sub>2</sub>O (%)</li> <li>C/N ratio</li> <li>High Calorific value (kCal/kg)</li> <li>Moisture (%)</li> <li>Density of MSW (kg/m<sup>3</sup>)</li> </ul> </li> </ul>	21.72 0.70 0.65 0.98 28.57 1421 43
	<ul style="list-style-type: none"> <li><b>SWEEPING</b></li> </ul>	
.1	Total length of roads (with or without footpath) (km)	

	<ul style="list-style-type: none"> <li>Total length of cement-concrete roads (km)</li> </ul>	
	<ul style="list-style-type: none"> <li>Total length of asphalted roads (km)</li> </ul>	
	<ul style="list-style-type: none"> <li>Total length of Kutchha roads (km)</li> </ul>	
.1	Total no. of sweepers employed	
	<ul style="list-style-type: none"> <li>Departmental</li> </ul>	
	<ul style="list-style-type: none"> <li>Contracted</li> </ul>	
.1	Working hours of sweepers	
.2	Norms of sweeping (e.g. one sweeper per ... population, or one sweeper per ... sq. m. area, or one sweeper per ... RMT road)	300 RMT
.3	Sweeping carried out at a location by	<ul style="list-style-type: none"> <li>One sweepers</li> <li>Two sweepers</li> <li>Three or more sweepers</li> </ul>
.4	Sweeping waste is put in a...	<ul style="list-style-type: none"> <li>Box type wheel barrow</li> <li>Containerised handcart</li> <li>Cane or bamboo basket</li> <li>Roadside bin</li> <li>Open dump</li> <li>Directly in the vehicle</li> </ul>
.5	Frequency of sweeping	<ul style="list-style-type: none"> <li>All seven days a week</li> <li>Six days in a week</li> <li>Alternate days</li> <li>Any other frequency (Please mention)</li> </ul>
.6	Total no. of wheel barrows provided	
.7	Total no. of containerised handcarts provided	
.8	Total capacity of wheel barrow (kg)	
.9	No. of containers and its capacity in kg	80
.10	Type of broom provided	<ul style="list-style-type: none"> <li>Long handle (No.: )</li> <li>Short handle (No.: )</li> </ul>
.11	Any other equipment provided (e.g. spade, shovel, tikow)	
.12	Protective gear provided	

	(e.g. leather hand gloves, gumboots, mask)	
<ul style="list-style-type: none"> <li><b>COLLECTION, STORAGE AND TRANSPORTATION</b></li> </ul>		
.1	Area covered for collection of MSW	
.2	No. of households covered	
.3	No. of households covered under door-to-door collection (bell ringing)	
.4	Is the collection carried out by municipal authority or private contractor or NGO?	
.5	Is the segregation is carried out at source?	Yes/No
	If no, what steps have been taken?	
.6	Total quantity collected (MT/day)	
.7	MSW collected in mixed form (MT/day)	
.8	MSW collected in segregated form (MT/day)	
.9	Whether littering is prohibited by the municipality?	Yes/No.
.10	Whether litterbins are provided?	Yes/No
.11	Frequency of waste collection	<ul style="list-style-type: none"> <li>○ Once in 24 hours</li> <li>○ Twice in 24 hours</li> <li>○ Thrice in 24 hours</li> <li>○ Alternate days</li> <li>○ Any other frequency (Please mention)</li> </ul>
.12	Is waste collected every day <i>i.e.</i> 7 days a week and 365 days a year?	Yes/No every day
	If no, give details	
.13	Total number, type, size, and capacity of storage bins / container / trailers provided	
.14	Whether the bins are open or closed?	
.15	Whether all bins are attended/cleaned daily? <i>(i.e.</i> 7 days a week and 365 days a year)	Yes/No
	If no, mention details	
.16	Whether the lifting of waste from the bins is manual or mechanical?	

.17 Vehicle details					
Type	Total No.	Capacity (MT)	Daily required	At present available	Additional proposed
Compactor (mobile)	11	6	2 trips per day	11	
	2	6	2 tons per day	2	
Dumper placer (with 2.5 m <sup>3</sup> containers)	9	2	2 trips per day	9	
Dumper placer (with 4.5 m <sup>3</sup> / 7 m <sup>3</sup> containers)					
Open truck	32	3.0	2 trips per day	32	
Open truck with tipping					
Tractor-trailer with tipping	18	2.0	2 trips per day	18	
Tractor-trailer without tipping					
Auto rickshaw with or without tipping					
Tricycle with or without tipping					
Any other type (please mention)					



.19	If the vehicles are open to atmosphere, are they covered with temporary plastic sheet?	Yes/No
<ul style="list-style-type: none"> <li>• <b>COLLECTION SYSTEM</b></li> </ul>		
.1	Approximate MSW collected (MT) <ul style="list-style-type: none"> <li>○ Household (urban)</li> <li>○ Slums</li> <li>○ Street sweeping</li> <li>○ Shops &amp; commercial establishments</li> <li>○ Markets</li> <li>○ Hotels, restaurants, eating houses</li> <li>○ Gardens, parks, fairs</li> <li>○ Slaughter houses</li> <li>○ Building sites (debris, earth, etc.)</li> </ul>	188
.2	No. Of premises / establishments <ul style="list-style-type: none"> <li>○ Households</li> <li>○ Shops, commercial establishments</li> <li>○ Slums, households, population</li> <li>○ Vegetable and fruit markets</li> <li>○ Fish and meat markets</li> <li>○ Hawkers</li> </ul>	5 3
.3	No. Of hotels, restaurants, eating houses <ul style="list-style-type: none"> <li>○ Grade / class I</li> <li>○ Grade / class II</li> <li>○ Grade / class III</li> <li>○ No. of star hotels</li> </ul>	78 110
.4	Guesthouses	
.5	Marriage halls	
.6	Hostels	
.7	Cinema halls	
.8	Theatres	
.9	Stables and no. of animals	
.10	Hospitals/ clinics/ nursing homes	20hospitals /73 nursing homes
	Total no. of beds	4040 beds

.11	Parks, gardens, recreation places like lakes, amusement parks	
.12	Building sites (under construction)	
.13	Slaughter houses	
<ul style="list-style-type: none"> <li><b>PROCESSING AND DISPOSAL OF MSW</b></li> </ul>		
.1	Total quantity of MSW processed (MT/day)	600 MT/day
.2	Technology / technologies adopted	
	o Composting (MT/day)	
	o Vermiculture (MT/day)	100mt/day
	o Pelletisation (MT/day)	
	o Waste to energy (MT/day)	
.3	Composting	
	Compost produced (MT/year)	
	Is it done mechanically?	Yes/No
	Is it the compost sold?	Yes/No
	If yes, the quantity sold (MT/year)	
	<ul style="list-style-type: none"> <li>Total revenue generated (Rupees/year)</li> </ul>	
.1	Vermi-composting	
	Vermi-compost produced (MT/day)	
	Is the vermi-compost sold?	Yes/No
	If yes, the quantity sold (MT/year)	
	<ul style="list-style-type: none"> <li>Total revenue generated (Rupees/year)</li> </ul>	
.1	Pelletisation	
	Pellets produced (MT/day)	
	Are the pellets sold?	Yes/No
	If yes, the quantity sold (MT/year)	
	<ul style="list-style-type: none"> <li>Total revenue generated (Rupees/year)</li> </ul>	
.1	Waste to energy	
	<ul style="list-style-type: none"> <li>Energy produced (MW/MT/day)</li> </ul>	
	Incineration	
	Pyrolysis	
	Bio-methanation	
	Any other (Please mention)	



• Revenue generated (Rupees/year)	
.1 Dumping grounds/landfill sites	
• MSW disposed off by open dumping (MT/day) [mixed/inert]	
• MSW disposed off by controlled dumping (MT/day) [mixed/inert]	
• MSW disposed off by sanitary landfill (MT/day) [mixed/inert]	
• No. of dumping grounds/ landfill sites	
Whether municipality legally owns them?	
• Area of each dumping ground/ landfill site	
• Whether the area will be sufficient for next 25 years	Yes/No
• If no, then what steps have been taken to acquire land?	
• Distance (in km) of dumping ground / landfill site from ...	
○ Habitation	
○ Drinking water source	
○ Religious or monument places	
• Distance from airport or airbase	
• Has it been designed scientifically	Yes/No
• Has the existing dumping ground been upgraded as required by MSW Rules, 2000	Yes/No
If no, what steps have been taken (provide details)	
.1 Whether the following facilities are provided	
• Weighbridge	Yes/No
• Fencing	Yes/No
• Approach roads/ internal roads	Yes/No
• Lighting facility	Yes/No
• Site office with monitoring equipment	Yes/No
• Managerial staff and manpower	Yes/No
• Covering material used daily as per Rules 2000	Yes/No
Is it available in sufficient quantity?	Yes/No

• Gas venting arrangement	Yes/No
• Leachate collection system	Yes/No
• <b>INSTITUTIONAL ARRANGEMENTS</b>	
.1 SWM services provided in the city/town by	Municipality/ Private contractor/ NGO
.2 Total no. of Supervisory Staff provided (e.g. Health officer/ Assistant Health officer/ Chief Sanitary Inspector/ sanitary Inspector/ Sanitary Supervisors, etc.)	
.3 Total no. of sweepers/ Pourakarmikas/ labourers/ Mukadam/ Jathedars/ Daffedars, etc.	
.4 Organisational structure	(Furnish separate sheet)
• <b>PRIVATISATION</b>	
.1 Whether any of the following service is privatised?	
• Sweeping	Yes/No
• Door-to-door collection	Yes/No
• Community collection	Yes/No
• Transportation	Yes/No
• Processing of MSW	Yes/No
• Sanitary landfilling	Yes/No
If yes, provide details	
If no, whether any future plans for privatisation	
• Details of NGO/ CBO/ Residential groups involved in any schemes/ projects initiated by municipal body in SWM/ clean city program	
• <b>COST IMPLICATIONS IN SWM</b>	
.1 Expenditure (in Rupees/Year)	

	<ul style="list-style-type: none"> <li>Total cost of SWM services under various heads</li> </ul>	
	<ul style="list-style-type: none"> <li>Establishment including salaries, uniforms, <i>etc</i></li> </ul>	
	<ul style="list-style-type: none"> <li>Tools, equipment, and consumables including disinfectant</li> </ul>	
	<ul style="list-style-type: none"> <li>Operation and maintenance of garbage vehicles including fuel, oil, spare parts, tyres, batteries, <i>etc</i></li> </ul>	
	<ul style="list-style-type: none"> <li>Hiring charges for contractors' vehicle &amp; machinery, bulldozers, JCBs, <i>etc</i></li> </ul>	
	<ul style="list-style-type: none"> <li>Other miscellaneous expenses</li> </ul>	
.1	The above total cost in terms of following activities (Rupees/Year)	
	<ul style="list-style-type: none"> <li>Sweeping cost</li> </ul>	
	<ul style="list-style-type: none"> <li>Collection cost</li> </ul>	
	<ul style="list-style-type: none"> <li>Transportation cost</li> </ul>	
	<ul style="list-style-type: none"> <li>Processing cost</li> </ul>	
	<ul style="list-style-type: none"> <li>Disposal / sanitary landfill cost</li> </ul>	
.1	Cost recovery	
	<ul style="list-style-type: none"> <li>Tipping fee or trade refuse charges (Rupees/Year)</li> </ul>	
	<ul style="list-style-type: none"> <li>Revenue generation (by sale of compost, vermi-compost, energy/ gas, <i>etc.</i> (Rupees/Year)</li> </ul>	
	<ul style="list-style-type: none"> <li>Annual expenditure for SWM services</li> </ul>	
	Cost of SWM services in Rupees per capita per year	
	Cost of SWM services in Rupees per tonne of MSW	
	<ul style="list-style-type: none"> <li><b>OTHER FACILITIES</b></li> </ul>	
.1	What facilities are provided for the following?	

• Biomedical waste	
• Diary related activities	
• Slaughter house and unauthorised slaughtering	
• Construction, demolition, debris and silt	
• Encroachments on footpaths, in parks	
• How many slums have been identified and whether there are provided with sanitation facilities?	
• Is there any enforcement wing for taking renal actions?	Yes/No
Recovery of administrative charges	
Fines under Municipal/Police Act	
Recourse to Municipal Act bye-laws	
• Whether any cases are registered and settled during last three years?	Yes/No
No. of cases registered during last three years	
No. of cases settled during last three years	
Total recovery during last three years	
<b>• SPECIAL/ UNIQUE SCHEMES OR INITIATIVES<sup>1</sup></b>	
.1 Recycling schemes for plastic, PET bottles	Yes/No
.2 Encouraging community activity such as ALM <sup>2</sup> formation	Yes/No
.3 Encouraging people's participation by building-wise or building complex-wise waste segregation and processing of organic waste by vermi-composting or composting	Yes/No
.4 Training needs for sanitary workers on health and safety issue	Yes/No
.5 Development of tools and implements	Yes/No
.6 Please provide list of potential NGO for implementing any of the initiatives (any association registered with municipal body/ unregistered local area management)	

---

<sup>1</sup> Details of schemes can be provided on a separate sheet

<sup>2</sup> Advance Locality Management

<ul style="list-style-type: none"> <li><b>AWARENESS</b></li> </ul>	
.1	Are you aware of the various notifications of the Ministry of Environment and Forests, Government of India
	<ul style="list-style-type: none"> <li>Municipal Solid Waste (Management and Handling) Rules, 2000</li> </ul>
	<ul style="list-style-type: none"> <li>Recycled Plastics Manufacture and Usage Rules, 1999</li> </ul>
	<ul style="list-style-type: none"> <li>Biomedical Waste (Management and Handling) Rules, 1998</li> </ul>
	<ul style="list-style-type: none"> <li>Coastal Regulatory Zones Rules, 1991 (amended up to 2002)</li> </ul>
	Place:
	Date:
	Signature of the Municipal Commissioner / The Health Officer/ The Chief Engineer (SWM)
	Stamp

Note: Please provide small note on the geographical and historical background of the city, tourist places, monuments, pilgrimage places, main industrial areas, industries, GNP, GDP, Airport, Airbase, main events and main people of national and international importance, *etc.*