

 of
The Comptroller and Auditor
for the year ended 31 March 20
Performance Audit on Compliance with Environm

Compliance with Environmental Laws in Lucknow City (Civil) Report No. 6





**Report
of
The Comptroller and Auditor General of India**

**For the year ended 31 March 2011
(Civil)**

**PERFORMANCE AUDIT ON
COMPLIANCE WITH ENVIRONMENTAL LAWS
IN
LUCKNOW CITY**

Report No. 6

Government of Uttar Pradesh



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Preface

This Report containing the observations arising out of Performance Audit on “COMPLIANCE WITH ENVIRONMENTAL LAWS IN LUCKNOW CITY” has been prepared for submission to the Governor of Uttar Pradesh under Article 151(2) of the Constitution.

The cases mentioned in the Report are among those which came to notice in the course of test audit of the accounts for the years 2005-11. Matters relating to the period subsequent to March 2011 have also been included wherever necessary.

Environment Department

Executive Summary

The Environment (Protection) Act, 1986 sets out that 'environment includes water, air and land and the inter-relationship which exists among and between water, air and land, human beings, other living creatures, plants, micro-organisms and property'. Sustainable development involves the integration of social, environmental and economic objectives.

Under the Directive Principles of State Policy of the Constitution of India, Article 48(A) enjoins upon the State to protect and improve the environment and safeguard the forests and wildlife of the country whereas Article 51-A (g) prescribes the duty of the citizen for protection and improvement of the natural environment including forests, lakes, rivers and wildlife as also to have compassion for living creatures.

The population of Lucknow City had been projected as 24.90 lakh and 28.17 lakh in the years 2006 and 2011 respectively in the Detailed Project Report (February 2007) for Municipal Solid Waste (MSW), prepared by Regional Centre for Urban and Environment Studies (RCUES) for Lucknow Nagar Nigam (LNN). This rapid growth has impacted the environment and its various resources including land, water and bio-diversity. Major audit findings of the performance audit are discussed below:

- The Uttar Pradesh State Pollution Control Board (UPPCB), the main agency for enforcement of Environmental Acts/Rules and responsible for formulation of policy for prevention, control and abatement of pollution did not perform its role effectively. It failed to plan a comprehensive programme for prevention, control and abatement of air pollution in Lucknow City since its inception in 1975. Lucknow Nagar Nigam also failed to fulfill their mandate in relation to prevention, control and abatement of water pollution.
- Low priority was accorded to environmental issues by the State Government as expenditure on it was reduced from ₹ 14.08 crore (0.025 *per cent*) to ₹ 3.11 crore (0.002 *per cent*) of total expenditure of the State during 2005-11. Similarly, UPPCB also spent very little amount on pollution abatement measures, which ranged between 0.54 *per cent* and 1.26 *per cent* of the total expenditure of UPPCB during 2005-11.
- Due to inadequate laboratory infrastructure, inadequacy of data, the State Government and its agencies were unable to effectively plan and implement their strategy and programmes.

- Suspended Particulate Matter (SPM) and Respiratory Suspended Particulate Matter (RSPM) were higher than the permissible limit of the National Ambient Air Quality Standard (NAAQS) as brought out in *paragraph number 4.2.1*.
- Lack of modern equipments and non-upgradation of emission checking equipment with UPPCB, Regional Transport Officer (RTO) and Traffic Police resulted in ineffective monitoring of air pollution.
- Despite its mandate, LNN did not adhere to the implementation schedule for the management of Municipal Solid Waste (MSW), including segregation of waste at source into biodegradable, recyclable and inert waste, even after the lapse of more than ten years of implementation schedule of MSW Rules.
- Lack of co-ordination of UPPCB with various Government agencies to identify the existing Health Care Units in Lucknow City resulted in unreliable assessment of Bio Medical Waste (BMW) generated.
- Three major hospitals including State owned Sanjay Gandhi Post Graduate Institute of Medical Sciences (SGPGI) did not have adequate incineration facilities for BMW.
- UPPCB failed to discharge its duty to identify all the sellers and users of plastic carry bags to verify their compliance with the environmental standards under the Plastics Manufacture, Sale and Usage Rules, 1999 (PM Rules). Also, it did not identify all the manufacturers, dealers, sellers, recyclers and bulk consumers of batteries in Lucknow City resulting in non-compliance to the Batteries (Management and Handling) Rules, 2001 (BM Rules) even after nine years of its framing.
- Massive constructions worth ₹ 2382 crore were allowed by the UPPCB in Lucknow city without prior environment clearance from the State level Environment Impact Assessment Authority.

CHAPTER 1

Understanding Environment and Its Audit

1.1 Introduction

The term 'Environment' denotes the land we live on, the air that we breathe, the surroundings that we enjoy, the plants and animals that share the space on the earth with us and the atmosphere that provides us our sustenance. The Environment (Protection) Act, 1986 sets out that 'environment includes water, air and land and the inter-relationship which exists among and between water, air and land, human beings, other living creatures, plants, micro-organisms and property'.

Sustainable development embraces integration of social, environmental and economic objectives. Ideally, any human activity should bring about a harmonious improvement in all three objectives. However, progress on one front may be achieved at the cost of damage to another. The focus of policies and programmes should, therefore, be to achieve an integrated balance amongst the three objectives and to preclude/prevent the destruction or degradation of environmentally relevant features and characteristics that impact future generations. The need for sustainable development presupposes protection of the environment.

The focus of the Performance Audit conducted (May-August 2010) and information collected (January 2012) has essentially been on compliance with Environmental Laws and Building Bye-laws in Lucknow City, the capital of the State of Uttar Pradesh in regard to :

- Water Pollution ;
- Air Pollution;
- Waste Management including Municipal Solid Waste (MSW) and Bio Medical Waste (BMW);
- Plastics Manufacture and Usages;
- Management of Batteries; and
- Building Bye-laws.

The population of Lucknow City had been projected¹ as 24.90 lakh and 28.17 lakh² in the years 2006 and 2011 respectively. The rapid growth of population of Lucknow City

¹ Projected population as per Detailed Project Report of Municipal Solid Waste prepared by Regional Centre for Urban and Environment Studies, Lucknow.

² Actual population was 29.01 lakh as per Census, 2011.

(City) has impacted its environment and various resources including land, water and bio-diversity.

1.2 International Convention/Conference on Environment, Indian Legislative Enactments- both Central and State

Audit studied the international conventions and conferences that propounded in international best practices with respect to water pollution, air pollution, waste management and building code. A comparative analysis on international convention/conference on environment, Indian Legislative Enactments- both Central and State Governments (GoI and GoUP respectively) given in *Appendix-I*.

As would be evident from *Appendix-I*, the State Government has adopted most of the international best practices. However, audit examination disclosed certain deficiencies in the implementation of these enactments as discussed in the report.

1.3 Audit Objectives

Environmental audit is a systematic process of obtaining and evaluating information about various environmental aspects. In view of growing importance assigned to environmental issues and sustainable development, both at the national and international level, environmental audit has assumed greater significance. The objectives of this performance audit were to evaluate mainly:

- the measures taken and adequacy thereof for compliance to Environment Acts and Rules made thereunder for checking Water and Air Pollution, Solid Waste Management including MSW and BMW, Plastics Manufacture and Usage and Management of Batteries;
- timely release of funds and their economical, efficient and effective utilisation;
- Effectiveness of implementation of the provisions of Master Plan, Building Bye-laws, Zoning regulations and National Building Code, 2005; and
- Providing independent, credible and objective evaluation of the information provided by various Government agencies with regards to environment.

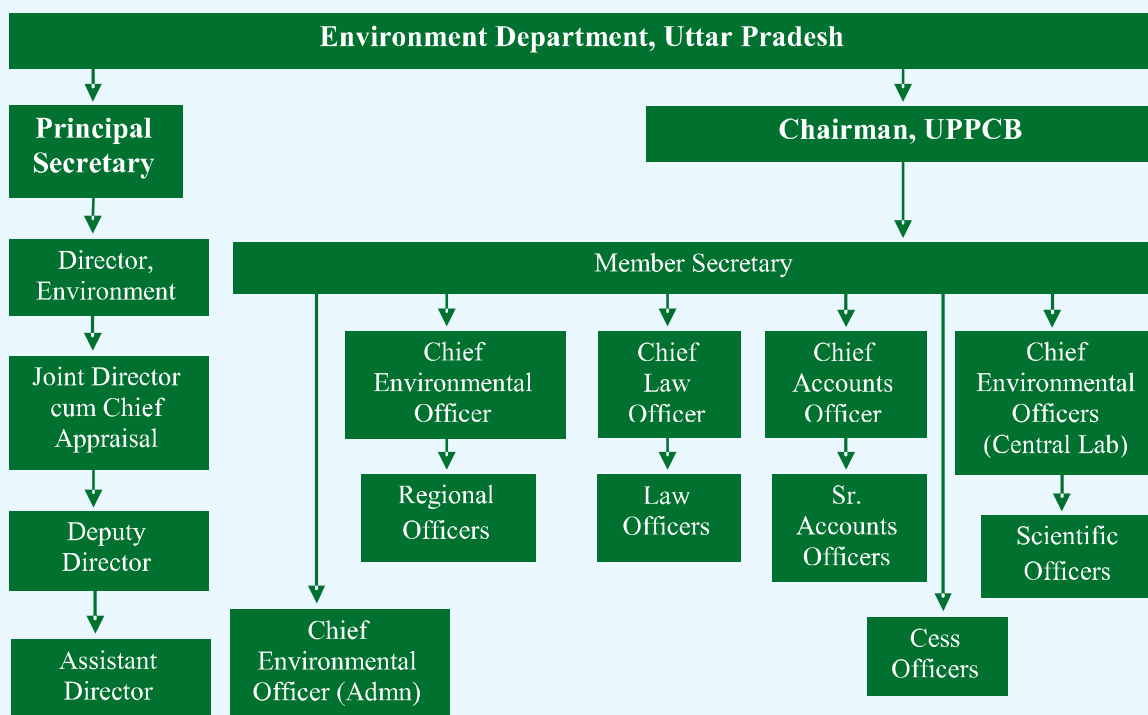
1.4 Audit Criteria

The following audit criteria were adopted for performance audit to assess the compliance with environmental laws:

1. The Water (Prevention and Control of Pollution) Act, 1974 and Water Cess Act, 1977;
2. The Air (Prevention and Control of Pollution) Act, 1981, National Ambient Air Standards fixed time to time;
3. The Environment (Protection) Act, 1986; and various rules made thereunder as indicated below:
 - i. The Municipal Solid Waste (Management and Handling) Rules, 2000;
 - ii. The Bio Medical Waste (Management & Handling) Rules, 1998;
 - iii. The Hazardous Waste Management & Handling Rules, 1989;
 - iv. The Plastics Manufacture, Sale and Usage Rules, 1999;
 - v. Batteries (Management and Handling) Rules, 2001; and
4. Master Plan 2021 of Lucknow and National Building Code.

1.5 Institutional Mechanism

The organisational setup of Environment Department is detailed below:-



The Principal Secretary, Environment and Urban Development Department is responsible for overall co-ordination of various activities related to ecology and environment including the prevention, control, abatement and monitoring of pollution in the State.

1.5.1 The Directorate of Environment

The Directorate of Environment (DOE) works under the administrative control of the Environment Department and performs multifarious inter-disciplinary activities relating to Policy Planning, Coordination, Conservation, Environmental Education, Training, Awareness Promotion, Eco-development and Restoration of degraded and vulnerable Eco-systems.

1.5.2 Uttar Pradesh Pollution Control Board

Uttar Pradesh Pollution Control Board (UPPCB), constituted in 1975, is the main agency for the administration of enforcement of Environmental Acts and Rules in the State and responsible for formulation of policy regarding environment protection. The main responsibilities are inspection of industries, hospitals, monitoring water bodies, wastewater, air quality and coordination with various agencies, initiation of action as per law in respect of any other matter pertaining to pollution.

The Regional Office, Lucknow of UPPCB headed by the Environmental Officer is responsible for monitoring and taking preventive action relating to environment in City.

1.5.3 Functions of other agencies

The *Lucknow Nagar Nigam* (LNN) is responsible for management of solid and bio medical waste in addition to management of use of plastics in accordance with the Bio Medical Waste Management Act and UP Plastic and other Non-biodegradable Waste Act, 2000. The *Lucknow Jal Sansthan* (LJS) was constituted under Water Supply and Sewerage Act, 1975 by the State Government for providing safe drinking water and sewerage system. The Transport and Forest departments enforce the provisions of the Motor Vehicle Act, 1989 and Forest Conservation Act, 1980 respectively, while the Police Department looks after traffic management and prevention of encroachment.

The Vice-Chairman, Lucknow Development Authority (LDA) is responsible for ensuring compliance with the provisions of Master Plan, Building Bye-laws and Zoning Regulations.

1.6 Scope of Audit and Methodology

Performance audit on compliance with various environment Acts in Lucknow City for the period 2005-10 was conducted between May and August 2010. Records were examined at the Offices of the Directorate of Environment (DOE), UPPCB, LNN, LJS, RTO, LDA, Chief Medical Officer (CMO), UP State Housing Board (UPSHB), *UP Jal Nigam* (JN), *UP Rajkiya Nirman Nigam* (UPRNN), Sr. Superintendent of Police (SSP) Traffic, UP State Bridge Corporation (UPSBC), Divisional Forest Officer (DFO), District Industries Centre (DIC) and Director of Local Bodies.

The entry conference was held on 28 June 2010 with the Principal Secretary, Environment and Urban Development in which officers of various departments participated wherein the Audit objectives, criteria and scope were discussed.

The Audit methodology involved collection of data through document analysis, response to audit enquiries, questionnaires, joint physical verifications, photographic evidencing and examination of reports and records of various implementing agencies.

The exit conference was held on 25 January 2011 with the Principal Secretary, Environment and Urban Development in which officers of various departments participated. The Government agreed to the observations raised by audit and stated that the recommendations would be taken care of.

1.7 Acknowledgement

The co-operation extended by the Principal Secretary, Environment and Urban Development, UPPCB and Director of Environment, Secretary, LJS and *Uppar Nagar Ayukt*, LNN is acknowledged.

1.7.1 Non-production of records by LDA

While it was agreed during the entry conference that records as requisitioned by Audit would be provided, LDA failed to furnish the survey reports, files relating to land acquisition, costing of schemes and estimates relating to construction works carried out by LDA during 2005-10.

CHAPTER 2

Financial and Manpower Management

2.1 Financial Management

2.1.1 Environment Department

The Environment Department (ED) is funded through the State budget. The allotment and expenditure of the ED for 2005-11 were as given in *Appendix-II*.

A provision of ₹ 80 crore each in revenue and capital heads was made for Taj Trapezium Zone project during 2005-06 to 2008-09, which was not utilised due to non-clearance of proposed works by National Environmental Engineering Research Institute, Nagpur, being a pre-condition for execution of works.

As evident from the *Appendix-II* that the percentage of expenditure of the ED to the total expenditure of the State came down from 0.025 in 2005-06 to 0.002 in 2010-11 indicating that the State Government did not accord adequate priority to environmental protection and improvement.

2.1.2 Uttar Pradesh Pollution Control Board

The income of UPPCB comprised State's share³ of Water Cess, reimbursed by the Ministry of Environment & Forest (MoEF), GoI and the Consent Fee recovered by it for issuing authorisations under Air and Water Acts.

A summary of receipts and expenditure including unspent balance of UPPCB during 2005-10 was as below:

Table 2.1: Receipt and Expenditure of UP Pollution Control Board

(₹ in crore)

Year	OB	Receipt					Total Exp.	CB
		Share of Cess reimbursed by GoI	Consent Fee		Misc. ⁴	Total		
			Water	Air				
2005-06	20.67	10.44	2.09	1.17	2.81	16.51	13.02	24.16
2006-07	24.16	11.48	2.06	1.28	2.74	17.56	15.87	25.85
2007-08	25.85	20.22	2.11	1.32	4.00	27.66	18.16	35.35
2008-09	35.35	9.13	6.84	6.02	6.06	28.04	31.31	32.08
2009-10	32.08	23.85	8.53	8.90	6.51	47.79	25.51	54.36
Total		75.11	21.63	18.70	22.12	137.56	103.87 ⁵	

(Source: Financial Statements of UPPCB)

OB: Opening Balance; CB: Closing Balance

The unspent balance steadily increased from ₹ 24.16 crore (31 March 2006) to ₹ 54.36 crore as on 31 March 2010 and was kept in fixed deposits.

³ 80 per cent of the total water cess collected by UPPCB.

⁴ NOC, Monitoring & Analysis Charges, Registration fee, etc.

⁵ Revenue : ₹ 81.58 crore and Capital : ₹ 22.29 crore.

On this being pointed out the UPPCB stated (August 2010) that it was preparing projects to utilise the balance amount. The reply of the UPPCB was not acceptable as no details of such projects were furnished to audit.

2.1.2.1 Negligible expenditure on Pollution Control Measures

As per the order number Q/17011/1/88-CPW dt. 28.12.1998 of MoEF, 25 *per cent* of the Cess reimbursed by GoI was to be spent on establishment and the balance on pollution reduction measures. Audit observed that while the UPPCB's expenditure on establishment exceeded the permissible limit, very little expenditure was incurred on pollution control measures as detailed in Table 2.2.

Table 2.2: Excess expenditure from cess by UPPCB

(₹ in crore)

		2005-06	2006-07	2007-08	2008-09	2009-10	Total
A.	Receipt						
	Cess	10.44	11.48	20.22	9.13	23.85	75.12
	Others (water, air, misc.)	6.07	6.09	7.44	18.92	23.95	62.47
	Total	16.51	17.57	27.66	28.05	47.8	137.59
B.	Expenditure						
	Other source	6.07	6.09	7.44	18.92	23.95	62.47
	Expenditure from Cess	6.95	9.78	10.72	12.39	1.56	41.40
	Total	13.02	15.87	18.16	31.31	25.51	103.87
	Permissible Expenditure on establishment from Cess at the rate of 25 <i>per cent</i>	2.61	2.87	5.06	2.28	5.96	18.78
	Excess Expenditure from Cess on establishment (Percentage)	4.34 (166)	6.91 (241)	5.66 (112)	10.11 (443)	-4.40 (-74)	22.62 (220)
	Expenditure on environment management	0.09	0.20	0.13	0.17	0.31	
	Percentage to total expenditure	0.69	1.26	0.72	0.54	1.21	

(Source: Financial Statements of UPPCB)

The above table indicates that the expenditure on establishment ranged between 112 and 443 *per cent* more than the limit fixed by the GoI during 2005-09 while the expenditure on environment related projects was merely 1.26 *per cent* to 0.54 *per cent* during 2005-10.

The Government stated (August 2011) that UPPCB had not made any excess expenditure from cess reimbursements from GoI and it had approximately ₹ 25.12 crore available

balance of cess at the end of 2010-11. It was further stated that during 2009-10 UPPCB incurred 19 *per cent* expenditure on pollution control activities.

The reply of the Government was not tenable as UPPCB incurred expenditure well beyond the limit prescribed by GoI for establishment. Regarding 19 *per cent* expenditure on pollution control activities, the Government did not submit details in support of the reply.

2.2 Manpower Management

The position of sanctioned strength and person in position as of March 2010 in the categories of technical and non-technical staff in UPPCB were as below:

Table 2.3: Position of Technical Staff as of March 2010

Sl. No.	Name of post	Sanctioned strength	Person-in-position	Shortage (percentage)
Scientists				
1.	Chief Environment Officers	05	03	02 (40)
2.	Assistant Scientific Officers	31	18	13 (42)
3.	Scientific Assistants	79	59	20 (25)
4.	Lab Assistants	39	01	38 (97)
5.	Monitoring Assistants	49	42	07 (14)
Total		203	123	80 (40)
Engineering Staff				
1.	Chief Environment Officer	05	06	(-) 01 (20)
2.	Environment Engineer	28	26	02 (07)
3.	Assistant Environment Engineer (I)	49	32	17 (35)
4.	Assistant Environment Engineer (II)	10	09	01 (10)
5.	Junior Engineer	69	30	39 (57)
6.	Sr. Draughtsman	08	05	03 (37)
7.	Draughtsman	12	01	11 (92)
Total		181	109	72 (40)

(Source: Statement of UPPCB)

Table 2.4: Position of Non-Technical Staff as of March 2010

Sl. No.	Name of Cadre	Sanctioned strength	Person-in-position	Shortage (percentage)
1.	Accounts	41	30	11 (27)
2.	Legal	17	11	06 (35)
3.	Clerical	367	302	65 (18)
Total		425	343	82 (19)

(Source: Statement of UPPCB)

Thus, UPPCB had acute shortage of both technical (40 *per cent*) and non-technical staff (19 *per cent*) in comparison to the sanctioned strength.

On this being pointed out UPPCB replied that the vacant posts of AEE (II) and SA were filled (2008) and action for filling up of other posts was in progress.

On this being pointed out, the Government replied (August 2011) that UPPCB recruited 103 personnel to various scientific and technical posts. No post wise details were provided in support of its reply. However, UPPCB provided (January 2012) the staff position as of March 2011 according to which there was still a shortage of 50 non-technical⁶ and 60 scientific and technical staff⁷, which also contributed to the inadequate implementation of schemes for environmental pollution as discussed in the succeeding chapters.

2.3 Prosecution

Any person who violates the provisions of the Acts is liable to be prosecuted by the UPPCB. Scrutiny revealed that during 2005-11, only 88 cases were filed during 2005-11 against the violators in the State as below:

Table 2.5: Status of cases filed against the violators in the State as on March 2011

Year	No. of Cases Filed Under			Total	No. of Cases Pertains to Lucknow City
	EP Act 1986	Air Act	Water Act		
2005-06	01	--	--	01	
2006-07	--	--	--	--	--
2007-08	--	01	33	34	01
2008-09	--	03	--	03	
2009-10	--	01	46	47	
2010-11	--	03	--	--	03
Total	01	08	79	88	04

(Source: Information provided by UPPCB)

UPPCB did not provide any details pertaining to fines imposed or legal action initiated against the LNN, *Chatrapati Sahuji Maharaj Chikitsa Vishwavidyalay* (formerly KGMC)

⁶ Non-technical staff: sanctioned strength-424; Person in position-374; shortage-50.

⁷ Scientific cadre: sanctioned strength-214; Person in position-199; shortage-15.
Engineering cadre: sanctioned strength-181; Person in position-136; shortage-45.

and SGPGI for non-implementation of MSW, Plastic Rules and BMW as discussed in succeeding chapters.

Audit observed that out of the above 88 cases, only four cases pertain to Lucknow City indicating UPPCB's lackadaisical approach in identifying the violators of Environmental Acts and Rules. UPPCB informed (August 2010) that it was not able to comply the various Rules/Acts due to shortage of manpower.

While accepting the facts, the Government stated (August 2011) that during 2007-11, UPPCB issued closure orders under the provisions of Water Act, Air Act and Environment (Protection) Act. It further stated that out of 637 units in the State, 28 units of Lucknow had been directed to close down.

2.4 Monitoring

UPPCB had neither fixed any norm for periodical inspection of waste generating establishments nor the number of inspections/checks to be conducted by its staff at various levels. It had also not apprised the ED regarding its inability to discharge the function of executive agency. The ED had also not devised any alternate option like strengthening of its own directorate and field offices by appointing suitable manpower for conducting inspection and checking.

CHAPTER 3

Water Pollution

Water pollution denotes the contamination of water or such alteration of the physical, chemical or biological properties of water which is harmful or injurious to public health and to the life and health of animals or plants or of aquatic organisms. Domestic sewage, poor sanitation, industrial effluents and surface runoff are the primary sources, that result in severe water and sanitation related problems, sometimes disasters. Lack of adequate collection, treatment and disposal facilities for sewage contribute to enhanced level of biological pollution of lakes, streams and rivers.

Water pollution is a threat to biodiversity itself, thereby adversely impacting sustainable development. Polluted water transmits bacteria and parasites which cause various diseases including diarrhoea and typhoid.

3.1 Regulatory Framework, Policies and Strategies

The Water (Prevention and Control of Pollution) Act, 1974 (Water Act) and Rules made thereunder provide for prevention and control of water pollution in the country and for maintenance and restoration of the wholesomeness of water. Under the Water Act, UPPCB is the nodal agency responsible for planning a comprehensive programme and advising the State Government on matters relating to water pollution including prescribing standards for sewage/trade/industrial effluents and for the quality of water, its analysis and classification. UPPCB is also required to evolve economical and reliable methods of disposal, treatment and utilisation of sewage and trade/industrial effluents. The agency is to advise the State Government regarding the location of any industry, the existence of which is likely to pollute surface or ground water. It is to establish or recognize laboratories to enable the board to test the quality of water. It is also to exercise punitive powers for violation of the Water Act.

In addition, according to Section 114 of the UP Municipal Act, 1959 the LNN is responsible for planning and management of the sewage system and drinking water system, as also the prevention and control of water pollution in City through LJS which was constituted in 1975 with the objective of providing safe drinking water, prevention of contamination, maintenance of sewerage system, creating awareness amongst the citizens, preparation and implementation of water storage systems and maintenance of hand pumps.

3.2 Operational Management

3.2.1 Drinking water

According to the assessment evaluation conducted (July 2010) by LJS, the total requirement of drinking water for the projected population of City in 2010 was 552 million litres per day (mld). Of 552, 282 mld (51 *per cent*) is met from ground water through 631 tube wells, 8751 public and private hand pumps. The balance 270 mld (49 *per cent*) is met from river through Aishbagh Waterworks and Bala Ganj Waterworks.

The Indian Institute of Toxicology Research (IITR), Lucknow had analysed (June 2007) 100 samples (50 each for piped and ground water supply) from different localities of the City during *pre-monsoon* of 2007 and conducted bacteriological tests in the three different categories of residential, commercial and industrial water. No further analysis of samples was done by IITR as of April 2011. The results of tests of the drinking water are given in ***Appendix-III***.

Audit observed that:

- Water samples of residential, industrial and commercial areas were contaminated to the extent of 33, 27 and 43 *per cent* respectively;
- Drinking water supplied through pipes was contaminated to the extent of 42 *per cent*;
- Underground water was bacteriologically unsafe in 26 *per cent* of water samples;
- Bacterial contamination in drinking water was relatively higher in samples from commercial and residential areas than from those in industrial areas; and
- In samples of industrial areas, bacterial contamination in ground water was higher than in piped water.

Scrutiny of the records of LJS revealed (July 2010):

- Despite having a laboratory, it had conducted only chlorination test at the water works on daily basis;

- Test for Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD) and status of coliform in the water supplied from the water works was not conducted by the LJS; and
- LJS sent samples to State Health Institute (SHI) for chemical and bacteriological test of drinking water but the test reports of SHI revealed that it carried out chemical tests only.

On this being pointed out in audit, LJS in its reply (July 2010) stated that it was facing shortage of technical/non-technical staff and that the laboratory had obsolete testing equipment which had not been upgraded for 60 years.

Scrutiny of the records of the UPPCB revealed (July 2010) that:

- Despite its mandate, during 2005-10 the UPPCB confined itself only to testing drinking water of tube-wells in the industrial areas of Chinhat, Aishbagh and Dewa Road. It did not test drinking water in residential and commercial areas;
- UPPCB, which was responsible for inspecting the water treatment plants and reviewing data relating to the purification of water, had failed to do so; and
- UPPCB had at no stage checked the samples of drinking water intended to be supplied. This fact was confirmed by LJS in June 2010.

On this being pointed out in audit, UPPCB in their reply (July 2010) stated that it had tested drinking water from tube-wells in the industrial areas of Chinhat, Aishbagh and Dewa Road only.

The Government replied (August 2011) that Orthotolidine method (OT) (free chlorine test) was done every day by a joint team consisting of representatives of CMO, Engineers of *Jal Kal Vibhag*, Health Officer of *Nagar Nigam* and also by the Departmental Laboratory to ensure supply of contamination free, chlorinated drinking water. Result of 3272 samples taken from various locations during 2010-11 has been found 100 *per cent* positive in departmental laboratory. Bacteriological tests done by SHI on 1754 samples, collected during 2010-11 from various parts of the city especially from communicable disease prone areas, revealed that only two samples of water of private supply were found unsatisfactory.

It is evident from the Governments' reply that though the requisite tests were conducted during 2010-11, it was silent about tests conducted during 2006-10, shortage of technical and non-technical staff and equipment at LJS laboratory.

3.2.2 Contamination of River Gomti

The source of pollution of the river Gomti is disposal of sewage and industrial effluents through 26 drains flowing directly into the river. Besides, unscientific disposal of MSW into the open areas in and around the city and on the embankment of the river, contaminates the surface water and groundwater due to leachate carried by the runoff of water. The waste water discharged from these sources continues to flow into the river Gomti posing great danger to water quality, which needs to be especially viewed against the backdrop of the fact that the river Gomti is an important source of drinking water to a large number of people living in City.

3.2.2.1 Failure in achievement of the standard norms of surface water quality

The standard norms of surface water quality fixed by CPCB were as below:

Table 3.1: Standard norm of Water quality

Parameter	Unit	A	B	C	D	Category Definition
Dissolved Oxygen (DO)	Mg/ltr	6	5	4	4	A- Without treatment but after filtration water is drinkable B- Bathing purpose C- Drinkable after traditional treatment D- Fisheries purpose only
Biochemical Oxygen Demand (BOD)	Mg/ltr	2	3	3	--	
Total Coliform	MPN ⁸ /100ml	50	500	5000		

(Source: UPPCB)

Scrutiny of the test reports (2006-2010) of the water samples, carried out by UPPCB, taken from different locations of the river (upstream to downstream) revealed that the pollution level of the river Gomti remained static during 2005-10. The water was not fit for drinking without treatment as total coliform level was far above the standard norm as given in *Appendix-IV*.

Thus, the levels of pollution at upstream locations were of "A" category and at downstream locations it was below "D" category in comparison to the standard norms of surface water quality (**Table 3.1**). The water was fit for drinking at upstream (water

⁸ Most Probable Number

intake point) but the BOD level and the total coliform level in the downstream was alarmingly above the norms.

On this being pointed (July 2010) UPPCB replied (August 2010) that the major source of water pollution of the river Gomti was the discharge of untreated domestic waste water and the industrial effluents and that the samples were collected from the river every month for detailed analysis. It also stated (August 2010) that lack of manpower was the main constraint for identification of polluters and initiating punitive action against them.

The reply is self explanatory. UPPCB, although established for specified purposes as enunciated in the Water Act of 1974, had failed to fulfill the mandate for which it was constituted.

3.2.2.2 Untreated sewage disposal in River Gomti

Under the UP Municipal Act, 1959 LNN is responsible for planning and management of sewerage system and as per Section 17(f) of the Water Act 1974, UPPCB is responsible for inspecting the same.

To bring the pollution levels under control, the Gomti Action Plan (GAP) Phase-1⁹ was introduced in 1993 in Lucknow, under which, 108 mld discharge of five out of total 26 drains, was diverted to the Sewerage Treatment Plant (STP-42 mld) constructed in 2003. The GoI approved a scheme (June 2003) under GAP Phase-II for treatment of sewage of 21 drains increasing the capacity of STP to match the capacity of sewage generated (400 mld) for its treatment. This envisaged increase of the capacity of old STP from 42 mld to 56 mld and construction of two additional STPs with a total treatment capacity of 370 mld (345 mld + 25 mld).

Scrutiny revealed that the physical progress¹⁰ (June 2010) of the STP-345 mld was 88 *per cent* with the stipulated date of completion being 31 December 2010, while that of the second STP-25 mld was only three *per cent* with no target date having been fixed for completion.

No significant investment for sewage treatment had been done since 1948, the year of inception of the Sewage Master Plan (SMP). Resultantly, over the years only 30-35

⁹ Financed by GoI through National River Conservation, Directorate, Ministry of Environment and Forest.

¹⁰ Status Report of *UP Jal Nigam*, the implementing agency.

per cent of area was covered (July 2010) by the sewerage system. A new SMP was taken up (August 2007) under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), in which Lucknow City was divided into four sewerage districts comprising 110 wards for utilizing the existing and ongoing works.

Of the above, the Detailed Project Report (DPR) February 2007 of Sewerage District-I & III covering 40 wards (36 *per cent*) was sanctioned (August 2007) and progress of its implementation upto July 2011 is given in *Appendix-V*.

The preparation of DPR (February 2007) for schemes of Districts II & IV comprising as many as 70 wards was yet to be finalized (August 2010). Further only 55 *per cent* of the sanctioned amount (₹ 7.12 crore) was released (₹ 3.95 crore), of which, only 84 *per cent* (₹ 3.31 crore) was expended (July 2011) and 70 wards remained to be covered under the sewage system.

Delayed construction of sewerage system and STPs and non-preparation of DPRs for Sewage Districts II and IV resulted in discharge (July 2011) of untreated 344 mld of sewerage, 86 *per cent* of total generated sewage of 400 mld in the river Gomti.

The Government stated (August 2011) that the works related to interception and diversion of all the drains discharging in the river Gomti had been commissioned in June 2011. The sewage from these drains was being taken to the two commissioned STPs at Daulat Ganj and Bharwara. It was further stated that the construction of 25 mld STP had been dropped from the Sewerage Master Plan.

In respect of disposal of Municipal Solid Waste (MSW) into the open areas in and around the City and on the embankment of the river, the Government stated (August 2011) that for the treatment of solid waste generated in the city, a Solid Waste Management Project (SWMP) had been prepared which included door-to-door collection, transportation and processing of the solid waste.

As regards disposal of untreated sewage in the river Gomti, the Government replied (August 2011) that the DPRs for the schemes of District II and IV were under preparation. The sanctioned work for District-I was proposed to be commissioned in December 2011 and the remaining two sewerage projects related to District-III were

proposed to be completed by the end of March 2012. The Government accepted that the total coverage of city area with sewerage was incomplete.

3.2.3 Non-identification of industries due to lack of co-ordination, monitoring and inspection

Provision 17(f) of the Water Act, 1974 provides for inspection by UPPCB of sewage or trade effluents, works and plants set up for treatment of water and works for treatment/purification thereof. In order to conduct inspection, prior identification of existing industries and continuous monitoring is an essential pre-requisite for effective enforcement. This necessitates effective co-ordination between UPPCB and the Industries Department of GoUP.

Scrutiny of records (July 2010) of the DIC, Lucknow revealed that 4476 industrial units were established in Lucknow District during 2005-10. DIC also informed Audit (July 2010) that according of consent and issuance of No Objection Certificate for water and air pollution was required to be given by UPPCB, being the concerned authority for pollution related matters.

Audit observed that the UPPCB had failed to identify all the industries located in Lucknow District and furnished (July 2010) a statement of only 234 industrial units.

On this being pointed out in audit, UPPCB stated (July 2010) that non-identification of all the industrial units, operating within the City, was attributable to the shortage of manpower.

The Government replied (August 2011) that necessary action was being taken to cover all polluting industrial units under the provisions of Air and Water Acts.

3.2.4 Water bodies

As per the City Development Plan, Lucknow (August 2006), City had 846 tanks and ponds, the majority of which are unidentifiable now due to reclamation. The exact number of existing water bodies was not available either with the UPPCB or with the LDA.

The National Botanical Research Institute (NBRI), Lucknow conducted (2003-05) a survey of water quality of 11 water bodies of Lucknow. No further survey has been conducted after 2005 till December 2011. As per this report the pond water was found

contaminated with heavy metals including Lead, Chromium, Cadmium, Arsenic, Zinc, Copper and Nickel thereby posing severe environmental and health problems including the leaching of harmful metals into the groundwater.

Out of the aforesaid 11 water bodies, audit conducted (July 2010) joint physical inspection of Butler Palace Lake and *Motijheel* to assess the present physical status with a representative of UPPCB. Results of the joint physical inspection are summarised below:

3.2.4.1 Dumping of garbage and municipal waste

Butler Palace Lake

The lake which was primarily used to rear fish is infested with garbage and municipal waste received from the Butler Palace Colony. Water of the lake has become green due to algal growth and is covered with aquatic grass. Further scrutiny of the records (July 2010) of UPPCB revealed that after a news item published regarding the death of fish in this lake, an inquiry was conducted (June 2009) to check the level of pollution of the lake. The team of UPPCB found that;

- the sewage generated by the nearby population was disposed of through three drains into the lake;
- the overflow of septic tanks of LNN operated *Sulabh Shauchalay* was also disposed of into this lake; and
- the DO level of lake water ranged between 2.5 and 3.5 mg per litre as against 4 mg per litre essential for survival of fish.

The Government replied (August 2011) that the sewer lines of the colony and the surrounding population had been connected to the main sewer line of the area and the treated over flow of the septic tank of *Sulabh Shauchalay* house was only flowing into the Butler Palace lake.

The reply was not tenable as the Government had not provided any periodical testing report about the water quality of the lake and treatment facility available at *Sulabh Shauchalay*. UPPCB had also not conducted further (after June 2009) periodical testing of water of the lake.

Motijheel

Joint physical inspection of *Motijheel* (July 2010), situated in Aishbagh, Lucknow City, by audit with a representative of UPPCB, revealed that it had become a dumping site of MSW. The outflow of sewage and drains of the surrounding locality, including the outflow of the drain of LNN run Abattoir carrying inedible oil, blood and wash imparts, were discharged into the lake as would be evident from the photographs below:



MSW dump in the Motijheel, Aishbagh, Lucknow



Drain of LNN run Abattoir flowing into the Motijheel

The Government stated (August 2011) that bid process for the construction, operation and management of a modern abattoir and Carcass Utilisation Plant under PPP mode is under progress.

It was also stated by the Government that action was being initiated for regular monitoring of prominent lakes and ponds in and around Lucknow.

3.3 Recommendations

- *The bacteriological and chemical testing of drinking water, supplied by the LJS through its system, should be done on a regular basis at a prescribed periodicity;*
- *Database of all water bodies should be maintained and a detailed Action Plan prepared to improve water quality; and*
- *LNN should provide requisite infrastructure for disposal of sewage.*

CHAPTER 4

Air Pollution

Air pollution occurs when the concentration of ‘foreign’ substances in the atmosphere cause harmful effects to living organisms. Substances that are generally recognized as air pollutants include Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM), Sulphur Dioxide (SO₂), Nitric Oxide (NO₂), Carbon Monoxide and Dioxide, Methane and Ozone depleting substances such as CFC. Overpopulation, especially the high rate of urbanization, and excessive and inefficient energy consumption including vehicular emission are among the root causes for air pollution in Lucknow City.

Air pollution affects human health adversely. Increase in the incidence of respiratory illness including asthma, bronchitis, emphysema and possibly cancer of the respiratory organs can be attributed to high air pollution.

4.1 Regulatory Framework, Policies and Strategies

The Air (Prevention and Control of Pollution) Act, 1981 (Air Act) is an important legislative measure aimed at prevention and control of air pollution in India. UPPCB is the designated authority for enforcement of the provisions of the Air Act by making a comprehensive programme for prevention and control of air pollution in the State and to advise the State Government on any matter concerning thereof.

4.2 Operational Management

For prevention and control of air pollution in City, UPPCB was required to prepare a comprehensive programme and secure its execution by effective co-ordination with the concerned Government departments and agencies. The UPPCB was also required to collect and disseminate information relating to air pollution and inspect air pollution control areas at such intervals as it deemed necessary.

Scrutiny of the records of UPPCB (July 2010), however, revealed that it had not prepared a comprehensive plan for improving air quality in City. However, UPPCB merely submitted (July 1999) suggestions regarding the long term and short term measures proposed to minimise the air and noise pollution to the Allahabad High Court in compliance with its order (May 1999).

4.2.1 Air Quality below the National Ambient Air Quality Standard

NAAQS was prescribed by CPCB. The air is polluted when the levels of SPM and RSPM exceed the prescribed standard norms. UPPCB monitors air quality at six locations (including one online monitoring station which was non-functional since May 2010) in the Lucknow City under the National Ambient Air Monitoring Programme. At these locations, monitoring was done for SPM, RSPM, SO₂, and NO₂. Scrutiny of the air quality testing reports (2006-2010) of UPPCB revealed that the quality of air was much below the prescribed safe standards as given in *Appendix-VI*.

The levels of SPM and RSPM continued to be higher as compared to the prescribed safe norms since 2006 to 2010.

4.2.2 Increase in the concentration of SPM and RSPM due to constant increase in the number of vehicles

In recent years, there has been a rapid increase in the number of vehicles in urban areas which has been the major contributor to increase air pollution.

Scrutiny of records (July 2010) of RTO revealed that there was an overall increase of 40 *per cent* in various categories of vehicles during 2009-10 as compared to 2005-06 as below:

Table 4.1: Registered Vehicles with RTO, Lucknow during 2005-06 and 2009-10

Sl. No.	Type of vehicle	No. of registered vehicles as on 31 March		Percentage increase in the number of vehicles
		2006	2010	
1	Commercial vehicles	28174	55381	97
2	Three wheelers and Auto Rickshaw	12502	19632	57
3	Two wheelers	660093	893977	35
4	Four wheelers	123234	181449	47
Total		824003	1150439	40

(Source: RTO, Lucknow)

UPPCB accepted (July 2010) that major sources of air pollution in the Lucknow city were vehicular emissions, industries, construction activities and DG sets, *etc.*

On being pointed out, the Government stated (August 2011) that all the (ordered) equipment of continuous Automatic Ambient Air Quality Monitoring Station for

Lucknow City had been received and the installation work of the station was under progress.

4.3 Ineffective role of the Transport Department

The role of the Transport Department is vital as vehicular emission was the major contributor of air pollution. Under the Motor Vehicle Act, 1989 Transport Department was responsible for checking vehicular pollution, taking punitive action against the violators and streamlining the transport system.

4.3.1 Incomplete conversion of diesel vehicles into CNG vehicles

The Transport Commissioner circulated (June 2006) a policy decision taken by the State Transport Authority for metro cities, including Lucknow City, to reduce pollution and streamline the transport system. As per the policy, only CNG vehicles were to ply for public transport and all diesel and petrol driven tempos, taxis and auto rickshaws were to be converted into CNG by 30 September 2006. Further, Environment Pollution Control Authority (EPCA), under the Chairmanship of Dr. Bhure Lal, on the direction (November 2001) of the Hon'ble Supreme Court, also prepared (2006) a Working Plan for City which, *inter alia*, provided that all public vehicles should be CNG driven.

The State Government intimated (July 2011) that 748 vehicles (254 UPSRTC buses, 26 private city buses, 388 school buses and 80 Public Service Vehicles) were plying on CNG whereas 35 *per cent i.e.* 405 vehicles (11 buses, 32 Public Service Vehicles and 362 school buses) were yet to be converted into CNG. The reason for non-conversion of vehicles was attributed (April 2011) to non-establishment of three¹¹ more CNG filling stations due to insufficient supply of CNG to City.

Thus, the Transport Department failed to achieve the target set for only CNG driven public vehicles by the Transport Commissioner even after a lapse of four years.

4.3.2 Non-upgradation of pollution checking equipments

In Lucknow City, the Transport Department recognised 82 private centres for checking the level of vehicular emission. Out of this, 59 centres had upgraded their software but did not install the requisite web-camera for ensuring the physical presence of vehicles reaching there for want of Pollution Under Control (PUC) certificate. 23 centres

¹¹ Requirement: 09 CNG filling stations, Available: 06 as of April 2011.

(28 *per cent*) had not upgraded their software; however, these centres issued PUC certificates as pointed out (December 2009) in an inspection done by ARTO (Technical). The details of vehicles checked by private centres were as below:

Table 4.2: Details of vehicles checked by private centres

Year	Number of vehicles checked		Number of PUC certificates issued		Number of vehicles not conforming to the standards	
	Diesel	Petrol	Diesel	Petrol	Diesel	Petrol
2005-06	26655	149641	24700	140611	1955	9030
2006-07	29250	170941	27006	161701	2244	9240
2007-08	30762	179863	28108	169993	2654	9870
2008-09	31193	187085	28393	177320	2800	9765
2009-10	35450	193185	22525	181835	2925	11350
Total	153310	880715	130732	831460	12578	49255

(Source: RTO, Lucknow)

On being pointed out, the Government replied (September 2011) that out of 88 private centres, 46 centres were upgraded with modified software and PUC certificates were issued only by upgraded centres. The upgradation of remaining centres is under process. Reply of the Government was only partially correct as the documents (Action Plan for City as in October 2010) enclosed with the reply disclosed that web-cameras were yet to be fitted in these upgraded centres to check physical presence of vehicles. Besides, the remaining 42 centres were yet to be upgraded.

4.3.3 Inadequate manpower in traffic police

To regulate traffic flow, remove encroachments and nab the violators of vehicular emission norms causing air pollution, traffic police requires sufficient number of manpower. Scrutiny of records (July 2010) revealed that there was acute shortage (53 *per cent*) of manpower in the traffic police wing. The position of person-in-position against the sanctioned strength as in July 2010 was as below:

Table 4.3: Position of staff

Post	Sanctioned Strength	Person-in-position	Shortage (percentage)
Traffic Inspector	04	03	01 (25)
Traffic Sub-Inspector	30	29	01 (3)
Head Constable	100	83	17 (17)
Constable	600	330	270 (45)
Total	734	445	289 (53)

(Source: Traffic Police, Lucknow)

The Government, instead of assessing the required (as per recommendation of the Chaube Committee in 2000) manpower on the basis of increasing number of vehicles and the expansion of city area, reduced the sanctioned strength of 736 in 2001 to 734 in 2010. The number of vehicles increased 275 *per cent*, from 4.19 lakh in 2001 to 11.50 lakh in 2010. Even the person-in-position against the sanctioned strength was below 45 *per cent* in case of constables, the key personnel for the traffic management.

The Government accepted (August 2011) the shortage of manpower and intimated that the vacant posts of traffic police had been filled after July 2010 and only 101 posts were vacant *vis-a-vis* the sanctioned strength. However, the Government was silent on the assessment of requirement according to recommendations of the Chaube Committee (2000).

4.4 Recommendations

- *Assessment, recruitment and deployment of manpower for policing traffic on actual requirement needs to be undertaken urgently; and*
- *UPPCB should establish more and upgraded air quality monitoring stations in new areas of the City.*

CHAPTER 5

Municipal Solid Waste Management

Management of waste accumulation and its proper handling and disposal represents a major challenge as it has a direct and severe impact on environment. Pollutants from wastes and un-scientific landfills could also lead to soil contamination, air pollution and green house gas emissions, with detrimental effects on environment. Wastes include municipal solid waste, bio-medical waste, industrial and hazardous waste.

5.1 Municipal Solid Waste and its Effect

Municipal Solid Waste includes organic wastes generated by households and commercial establishments. Its improper disposal in open areas, lakes and on/in river banks/river has a direct negative impact on the living conditions of living beings and the overall environment. It also results in the spread of communicable and non-communicable diseases apart from contaminating soil, water and generating toxic and green house gases.

5.1.1 Regulatory framework, policies and strategies

The Environment (Protection) Act, 1986 (EP Act) enacted by the GoI provides for the protection and improvement of environment and prevention of hazards to human being, other living creatures, plants and property. Municipal Solid Waste (Management and Handling) Rules, 2000 were framed in conformity with the EP Act with the aim at standardization and enforcement of MSW Management practices. These rules stipulate that every municipal authority shall, within its territorial area, be responsible for the implementation of the provisions and for any infrastructure development for collection, storage, segregation, transportation, processing and disposal of MSW. LNN is the implementing agency in Lucknow City. Rule 4(2) and 4(3) of MSW Rules prescribe the implementation schedule for processing and disposal of MSW as stated in **Table 5.1**.

Table 5.1: Implementation schedule for processing and disposal of MSW

Sl. No.	Compliance Criteria	Time schedule
1	Setting up of waste processing and disposal facilities	By 31.12.2003 or earlier
2	Monitoring the performance of waste processing and disposal facilities	Once in six months
3	Improvements to existing landfill sites as per the provisions of these rules	By 31.12.2001 or earlier
4	Identification of landfill sites for future use and making site(s) ready for operation	By 31.12.2002 or earlier

(Source: MSW Rules)

5.2 Non-alignment of the Annual Action Plans and non-adherence to the Implementation Schedule

In compliance with the provisions of the MSW Rules for processing and disposal of MSW within prescribed time schedule, LNN was required to prepare perspective/long term plan. A Detailed Project Report (DPR) and allied Engineering Drawings on SWMP for City, in line with the guidelines of CPCB and MSW Rules, 2000, had been prepared by the Regional Centre for Urban and Environmental Studies (RCUES), GoI in February 2007 which, *inter alia*, included the status of the existing solid waste management system, proposals for MSW management, equipment specifications and route plans, design of waste to compost plan, conceptual design of sanitary landfill and engineering drawing, operational and maintenance aspects, financial framework for five years.

Scrutiny of the records of LNN revealed (June-July 2010) that neither had the Annual Action Plan (2009-10) of LNN been aligned with the DPR of 2007 nor had a perspective/long term plan been prepared by LNN despite lapse of the time schedules specified in the Rules. LNN continued working as per its old solid waste management system that led to the dumping of waste in open ground creating civic, environmental and health problems.

While accepting the audit observations, the Government replied (August 2011) that LNN had prepared SWMP which was approved by GoI on 12 March 2007. The project was under implementation and targeted to be commissioned by 30 November 2011.

5.3 Operational Management

Operational management of MSW includes waste collection, storage, segregation, recycle and its ultimate disposal. Audit findings are discussed in succeeding paragraphs.

5.3.1 Manpower management for effective handling of MSW

According to the norms fixed by the Government, 28 *Safai Karmchari* were required for per 10,000 population to handle MSW. The scrutiny of Annual Plan Reports of LNN revealed that there was shortage of *Safai Karmcharis*¹² during 2007 to 2010 as below:

¹² The status of *Safai Karmchari* during the year 2005 and 2006 was not made available to the audit as of April 2011.

Table 5.2: Status of *Safai Karmchari*

Sl. No.	Year	Projected Population (in lakh)	Requirement as per norm (in number)	Available (in number)	Shortage (per cent)
1	2007	26	7280	4808	2472 (34)
2	2008	28	7840	4776	3064 (39)
3	2009	30	8400	5858	2542 (30)
4	2010	32	8960	5745	3215 (36)

(Source: LNN)

Thus, during 2007-10, the shortage ranged between 30 and 39 *per cent*.

The Government replied (August 2011) that shortage of manpower might not be a problem for LNN as an operator on Public Private Partnership (PPP) basis had been selected under SWMP.

5.3.2 Unhygienic MSW collection and storage points

As per Schedule II of the MSW Rules, LNN is required to establish and maintain waste storage facilities in such a manner that these do not create unhygienic and insanitary conditions around it. According to the Annual Plan Report (2010), City was divided into six zones consisting of 110 wards. It had 32 Modern Waste Houses (*Apshist Grih*) and 446 *Pucca* and *Kachcha* collection points. LNN also had 27 RCC *Dhalaos*, 24 containers and 100 bins for storage of MSW collected. These collection and storage points were open and exposed to atmosphere as shown below:



Open waste collection centres of LNN

LNN's requirements for secondary storage of MSW, as of 31 March 2010, were inadequate as overleaf:

Table 5.3: Status of secondary storage centres of MSW

Type of storage	Required	Available	Shortage (Per cent)
RCC <i>Dhalaos</i>	59	27	32 (54)
DP Containers	128	0	128 (100)
1100 Litre Capacity Bins	1494	100	1394 (93)
600 Litre Capacity Bins	1048	0	1048 (100)
150 Litre Capacity Twin Bin Pair	350	0	350 (100)

(Source: Records of LNN)

As evident, the shortage of secondary storage of MSW ranged between 54 and 100 *per cent*.

The Government stated (August 2011) that after commissioning of SWMP the temporary storage of waste in *Dhalaos* would not be required as the solid waste collected would not touch ground before it reaches the processing plant. The Government did not respond to audit observations on shortage of other secondary storage centres of MSW.

5.3.3 Violation of Schedule II compliance criteria for collection

Further, while the Schedule II of MSW Rules prescribes the criteria for collection of solid wastes, organizing house-to-house collection and devising collection of waste from slums, hotels, slaughter houses, market places etc., the compliance criteria was violated as test check (July 2010) of the records of the LNN revealed that door-to-door collection service was not provided in any ward of the City during 2005-09. LNN informed (April 2011) that door-to-door collection service was initiated in four wards since November 2010 and extended to 55 wards as of April 2011.

The Government replied (August 2011) that at present door-to-door collection of MSW spans over a stretch of 57 wards with the help of a private firm¹³ and remaining 53 wards would also be covered (November 2011) with the commissioning of SWMP.

5.3.4 Segregation of waste at source

Segregation means separating the solid waste into groups of organic, inorganic, recyclables and hazardous wastes. The recyclable wastes are required to be directly transported to the processors for new products, which help reduce the load of solid waste. The waste, if not segregated at source, causes hazards to the environment.

¹³ M/s Jyoti Envirotech.



Un-segregated waste disposed adjacent to the river Gomti and at a Collection centre of LNN

According to DPR (February 2007), MSW primarily comprises of 30-35 *per cent* of organic fraction, 3-6 *per cent* of recyclables (paper and plastic), 40-45 *per cent* of inert material and less than one *per cent* of glass and metal. Approximately 1500 MT waste was generated daily in the City. However, no steps were taken by LNN for the segregation of waste at source into biodegradable, recyclable and inert waste. LNN in its reply (August 2010) admitted that no system existed for segregation of MSW.

The Government accepted (August 2011) that the target of segregation (December 2003) of waste had not been achieved. It further stated that the processing plant, being established under SWMP, had the facility of segregation into dry and wet waste, so that the recyclables and biodegradable waste were processed separately. Segregation of wastes into dry and wet categories has no relationship with biodegradable, recyclable and inert wastes and, therefore, the reply of the Government was irrelevant.

5.3.5 Inadequate and improper transportation facility for MSW

As per the DPR (February 2007), estimated quantity of MSW generation during 2006-10 ranged between 1198 MT to 1376 MT per day, whereas LNN intimated in July 2010 that on an average 1500 to 1800 MT of MSW was generated daily in Lucknow City. For transportation of MSW, LNN had 176 vehicles (131 tippers, 35 three wheeler tippers, four 3-wheelers and six tractors).

Audit observed that LNN did not have the required transportation facilities for collection and disposal of MSW. Though, LNN intimated (July 2010) the requirement of vehicles

and machines for the transportation of MSW, shortage of vehicles and machines as of July 2010 was as below:

Table-5.4: Shortage of vehicles and machines for transportation of MSW

Sl. No.	Type of vehicle/machine	Requirement	Available	Shortage (Per cent)
1	Dumper placers	28	23	05 (18)
2	Refuse Collector	10	03	07 (70)
3	Cattle Lifting Vehicles	02	0	02 (100)
4	Rickshaw with bins	3140	0	3140 (100)
5	Wheel barrow for street sweepings	2200	0	2200 (100)
Total		5380	26	5354

(Source: Records of LNN)

Thus, there was acute shortage, if not near absence of vehicles and machines for transportation of MSW. Further, it was stipulated in the MSW Rules that the vehicles used for transportation of wastes are required to be covered. Contrarily, LNN was using vehicles for transportation of MSW without proper covering, as shown below in the photographs, thereby polluting the environment by littering of waste during transportation.



MSW loaded and transported in open trucks of LNN

The Government replied (August 2011) that an operator had been selected on the basis of PPP under SWMP for operation of door-to-door collection and transportation activities and LNN would attend only to the road sweeping and drain desalting activity. As regards transportation of MSW without proper covering, LNN stated (July 2010) that action is taken against the defaulters, violating the rules.

5.3.6 Non-arrangement of proper landfill sites

Schedule III of the MSW Rules stipulates that it shall be the responsibility of the Development Authority to identify the landfill sites and hand over the same to the concerned municipal authority for development, operation and maintenance.

Although four sites covering a total area of 120 hectare were proposed (March 2005) in the Lucknow Master Plan 2021, however, LDA could not provide appropriate land for landfill sites as of August 2011. LNN also failed to proactively pursue the identification and acquisition of appropriate land for construction of landfill sites, even after the lapse of more than 10 years.

LNN stated (July 2010) that it was the responsibility of LDA to provide the land as per specifications of the landfill site but no landfill site could be made available. Further, due to non-availability of proper landfill site, MSW presently generated was disposed of at Didoli. However, during joint physical inspection with representatives of LNN, LJS and UPPCB it was revealed (July 2010) that MSW was littered at other places also. The photographs of some of the places like bank of the river Gomti; near Sugar Institute, Telibagh; and Rubbish Removal (RR) Workshop of LNN also confirmed the unauthorised disposal of MSW.



Waste disposed at the bank of the river Gomti and near RR workshop of LNN



Waste disposed near RR workshop of LNN and Sugar Institute, Telibagh.

Joint physical inspection (July 2010) with representatives of LNN, LJS and UPPCB also revealed that dumping of MSW on roadside clogged the sewerage system creating other problems as below:



Road side dumps at Gomti bandh



Stray animals on open dump at Telibagh and Gomtinagar drain clogged with waste

- There were waste dumps on roadsides and *Haider*, *Sarkata* and *Kukrail Nalas* (riverlets) in the city were clogged;
- Animals strayed on open dumps and collection bins overflowed; and
- The historic *Haider Nala*, under the jurisdiction of Irrigation Department had been converted into a garbage dumping centre.

Thus, non-identification and acquisition of land for landfill sites resulted in un-scientific and improper disposal of MSW by continuous violation of MSW Rules by LNN. UPPCB did not initiate any punitive action, in accordance with the existing legislation, against LNN for violation of MSW Rules.

The State Government replied (August 2011) that LDA had identified four sites for

disposal of garbage in its Master Plan 2021 in Lucknow. It was further stated that LNN was developing a processing plant and landfill site at *Gram Shivri* under SWMP for which 19 hectare of land was handed over in February 2011 by Agriculture Department and work was started immediately thereafter.

The reply was not tenable as the Government failed to arrange the required land in last ten years.

5.3.7 Inadequate Safety measures for *Safai Karmachari*

As per Schedule II to Rule 6 of the MSW Rules, manual handling of waste is prohibited. If unavoidable, manual handling is required to be carried out under proper precautions with due care for safety of workers. For work around sewage and waste water, use of Personal Protective Equipment (PPE) (gloves, goggles, a face shield, water-resistant suit or respirator- depending on the job) are the recommended ways of protecting workers from exposure and susceptibility to disease. While analysing the existing MSW system in the DPR (February 2007), it was specified that *Safai Karmcharis* involved in the primary collection of MSW were not using PPEs and that manual handling was prevalent in City.

Test check of the records of LNN (July 2010), however, revealed that no PPEs were available with LNN. On being pointed out LNN replied (April 2011) that it did not purchase any PPE but provided allowances to procure the same. The reply of LNN was not acceptable as it did not ensure the safety of *Safai Karmcharis*.

Joint physical inspection and photographs of STP, LNN Incinerator and primary/secondary storage points also confirmed the audit contention.



Conservancy staff without PPE at Daulatganj STP and Gaughat Water treatment plant



Conservancy staff without PPE at LNN Incinerator

The Government replied (August 2011) that the conservancy staff, engaged for collection and transportation of MSW, had been provided with the PPE by the operator selected for the purpose.

The reply was partially true as these operators were engaged only in 57 out of 110 wards, as of August 2011, for collection and transportation of waste only.

5.4 Disposal of Abattoir Waste

There were three abattoirs in the City under LNN and one in the Cantonment area run by the Cantonment Board as of July 2010. According to the DPR (February 2007) of RCUES, on an average, 350 animals were slaughtered everyday. The daily generated waste from these abattoirs included vegetable waste: 12.5 MT, inedible oils: 5 MT, blood: 3 Kilo Litres (KL) and wash imparts: 360 KL along with other wastes including skin, horns and bones. These abattoirs did not have any treatment facility for solid and liquid waste. Untreated solid waste was disposed of in nearby open dumps while liquid waste was disposed of through drains. There was also no caracas¹⁴ processing plant in Lucknow.

The joint physical inspection (July 2010) with a representative of LNN of the abattoir at Aishbagh revealed that a heap of solid waste of slaughtered animals was lying in the open, within the premises of the abattoir and was drained out to the *Motijheel* through a connecting drain of the abattoir as shown in the photographs over leaf and at page 21 of the report.

¹⁴ Caracas plant: processing of bones of animals.



Heap of solid waste and blood of slaughtered animals lying in open at abattoir, Aishbagh

The Government replied (August 2011) that LNN has already been directed for establishing a Modern abattoir and Carcass Utilisation Plant for City on PPP basis.

Thus, non-shifting of abattoir and delays in construction of Modern abattoir and Carcass Utilisation Plants were not only creating unhygienic conditions in the surrounding areas but also polluting water bodies like *Motijheel* in city.

5.5 Shifting of Dairies outside the City

The Allahabad High Court had ordered (May 1999) shifting of dairies outside the City area. Accordingly, in compliance with the order, LNN constructed cattle colonies under *Gokulgram Yojna* at Takrohi, *Kamdhenu Yojna* at Hardoi Road and Para Cattle Colony but failed to shift the dairies within the Lucknow City to these colonies. LNN also failed to take or initiate action for closure of these unauthorized dairies though more than 12 years have gone by since the order of the Hon'ble High Court.

The Government did not furnish any reply on this issue.

5.6 Recommendations

- *Compliance criteria of implementation schedule should be adhered to;*
- *Effective steps should be taken to fill-up the shortages of manpower and transportation vehicles;*
- *Different colour bins may be kept at source for segregation of waste into biodegradable, recyclable and inert waste; and*
- *Safai Karamcharis involved in collection of MSW should be provided with Personal Protection Equipment.*

CHAPTER - 6

Bio Medical Waste

Bio Medical Waste (BMW) is the waste generated by hospitals and other Health Care Units (HCUs¹⁵) and consists of discarded drugs, waste sharps, microbiological and biotechnological waste, human anatomical waste, animal waste *etc.* HCUs generate three types of wastes, namely MSW/general waste, infectious waste and liquid waste.

6.1 Regulatory Framework, Policies and Strategies

With a view to controlling indiscriminate disposal of wastes generated at HCUs, GoI enacted Bio Medical Waste (Management & Handling) Rules, 1998 (BMW Rules), under the Environment (Protection) Act 1986. It is the duty of the every HCU, generating BMW, to take all steps to ensure that such waste is handled without any adverse effect to the human health and environment. The infectious wastes are required to be collected, transported, treated and disposed in accordance with the norms laid under the BMW Rules.

UPPCB is the designated authority for enforcement of the provisions of these Rules and according permission for generation, collection, reception, storage, transportation, treatment, disposal and/ or any other form of handling of BMW.

6.2 Operational Management

6.2.1 Incomplete identification of Health Care Units and assessment of BMW

Identification of HCUs and assessment of daily generated BMW is essential for enforcement of the BMW Rules and for providing suitable common Incinerator/Autoclave/Microwave system for disposal of BMW. Scrutiny of the records (July 2010) of UPPCB and LNN revealed that the data maintained by these agencies regarding number of HCUs functioning in the City and quantum of BMW generated by these contained inherent contradictions. While UPPCB authorized 354 HCUs¹⁶, RCUES, while preparing DPR (February 2007) for MSW, had identified (February 2007) 2796 HCUs based on field survey and information furnished by LNN. CMO, Lucknow furnished a list of 836 HCUs registered with him between 2007 and July 2010. The UPPCB, as late as August 2010, requested¹⁷ CMO, Lucknow to ensure that all the hospitals, nursing homes, pathological labs *etc.* had valid authorization of UPPCB.

¹⁵ HCU means blood bank, clinic, dispensary, hospital, nursing home, pathological laboratory, veterinary institution animal house, *etc.*

¹⁶ Those attached to any treatment facility.

¹⁷ UPPCB letter No.71681/C-5/Samanya Bio me we/10 dt. 13.08.2010.

Audit observed (July 2010) that UPPCB had neither developed any mechanism to assess the quantity of BMW generated in the City nor entrusted such work to any authority and consequently the assessed quantity of generated BMW by three authorities showed wide variations as below:

Table 6.1: Assessed quantity of generated BMW

Sl. No.	Name of Agency	Quantity of BMW assessed per day in MT	Basis of assessment
1	RCUES	1.85	470 gm/bed/day based on field survey.
2	CPCB	3.70	Average BMW generation between 240 and 824 gram /bed/day.
3	UPPCB	2.40	200 gm/bed/day.

(Source: LNN, CPCB & UPPCB)

Thus, lack of co-ordination of UPPCB with various agencies in ascertaining the number of HCUs and assessing the quantum of BMW generated resulted in the disposal of untreated BMW, in violation of the Rules, as discussed in the succeeding paragraphs.

The Government stated (August 2011) that it issued a Circular on 21 July 2011 for Government HCUs and a Press note dated 26 July 2011 for private HCUs to get registered under BMW Rules, 1998 in Regional Office, UPPCB, Lucknow.

6.2.2 Inadequate coverage of BMW generating units

As per the time schedule fixed in Schedule VI of the BMW Rules for waste treatment, facilities like incinerator/autoclave/microwave system were required to be made operational in all HCUs of Lucknow City latest by 31 December 2002. LNN is the designated authority for providing the sites for suitable common disposal/incineration of biomedical waste generated.

Audit scrutiny revealed (July 2010) that three Common Bio-medical Waste Treatment Facilities (CBWTF) *i.e.* LNN, Balrampur Hospital and Fatima Hospital were functioning in City up to 2006-07. These facilities, however, catered to only 260 out of 1070 HCUs. In addition, 1726 private practicing doctors did not have the facilities specified in the BMW Rules. It was observed that only 94 more HCUs were connected to CBWTF during 2007-10. As per information furnished by UPPCB (April 2011) the incinerator of LNN was closed since November 2010, while at Balrampur, it was not operational for the last two years. The HCUs connected with these incinerators were now connected with

CBWTF of Faizabad and Barabanki. Hence, neither new CBWTF established in Lucknow City, nor new HCUs were connected with the already existing CBWTF.

Thus, UPPCB neither adhered to the time schedule for covering all HCUs nor took any action against the HCUs not attached with any CBWTF.

6.2.3 Segregation, packaging, transportation and storage of BMW

Schedules II & III of Rule 6 of BMW Rules provide that bio medical waste shall be segregated at the point of generation and kept in yellow, red, blue and black containers/bags prior to its storage, transportation, treatment and disposal. The containers shall be labelled as Bio-hazards and carry/display Cytotoxic hazard symbol.

Joint physical inspection (July 2010) of LNN incinerator with a representative of LNN revealed that the un-segregated BMW was collected and transported by LNN to the incineration site and no prior segregation was being done before incineration.

On this being pointed out in audit, LNN stated (July 2010) that no arrangement was made for segregation of BMW at incinerator site. Audit also observed that separate space had not been provided for storage of untreated bio medical waste as shown in the photographs below:



Untreated bio medical waste stored in open space at LNN Incinerator

6.2.4 Common Bio-medical Waste Treatment Facility

Schedule I of Rule 5 of BMW Rules entails the installation of incinerators, autoclave/microwave and shredder for disposal of microbiological and biotechnological wastes; waste sharps *e.g.* needles, syringes, blades, glass, *etc.*; and solid waste *e.g.* tubing, catheters, intra-venous sets *etc.*

Scrutiny of the records of UPPCB revealed that the CBMWTF,¹⁸ operated by LNN, was handling 1.2 MT/day for 233 BMW generating HCUs with the following shortcomings:

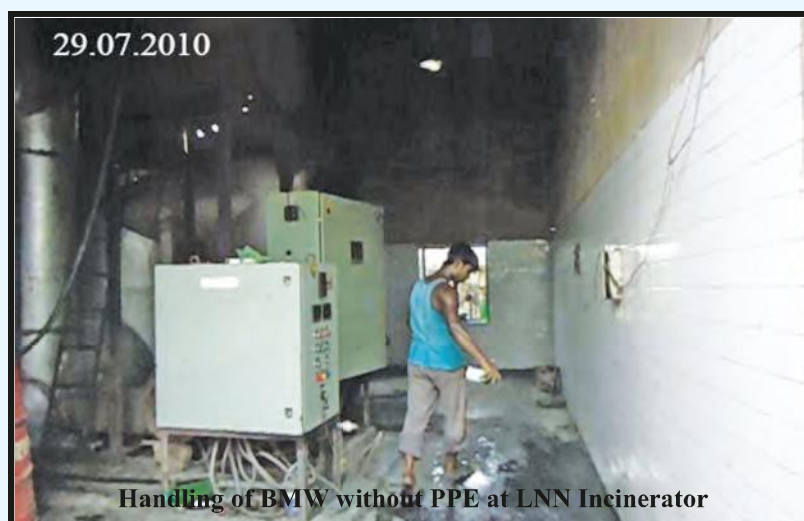
- The autoclave used to disinfect the waste was not installed;
- The shredder by which plastic bottles, intravenous tubes, syringes and needles are shredded was not installed; and
- Effluent Treatment Plant (ETP) had not been installed for purification of the infected water discharged from incinerator.

Joint physical inspection (July 2010) of the CBWTF with a representative of LNN confirmed the above brought out facts.

6.2.5 Handling of BMW without PPE

According to 'International Hazard Datasheets on Occupation' the incinerator operators were exposed to a variety of hazardous chemical agents which may cause acute poisoning, chemical accidents, damage to the respiratory system, chronic diseases, *etc.* The operators may also suffer cuts and pricks from sharp tools, glass *etc.* For their safety they should use PPE like safety boots and goggles, chemical resistant clothing, gas masks *etc.*

Joint physical inspection (July 2010) of LNN incinerator with a representative of LNN revealed that the operators were working in the incinerator without PPE as shown in the following photograph:



¹⁸ Authorization expires on 30 June 2010.

LNN stated (April 2011) that it did not purchase any PPE but provided allowances to procure the same. The reply of LNN was not acceptable as it did not ensure the safety of the workers during handling of BMW.

The Government also replied (August 2011) that the CBWTF of LNN at Eldeco Greens, Bheekhampur, Lucknow was closed on 13 November 2010 in compliance of the orders (November 2010) of the Chairman, CPCB, New Delhi. Since then LNN was not collecting, transporting or processing the bio medical wastes. 298 waste generator of BMW registered with the LNN, were being provided services by the operators of the private facilities, operational at Lucknow, Barabanki and Faizabad under the authorization of UPPCB. It was further stated that LNN was in the process of signing an agreement for setting up of CBWTF under PPP mode on Design Build Finance Operate and Transfer (DBFOT) basis with its operations and maintenance for fifteen years.

6.2.6 Disposal of Untreated BMW

Log books of the incineration plant of LNN revealed (July 2010) that the incinerator was out of order for 119 days¹⁹ during 2006. Therefore, BMW weighing 155.23 MT was land filled without treatment in a nearby area. The incinerator was also not operated due to power break down, repair *etc.* for 118 day as shown below:

Table 6.2: Status of BMW treatment at LNN Incinerator during 2008-10

Sl No.	Period		No. of days	Quantity which could not be incinerated (in MT)
	From	To		
1	04.04.2008	18.04.2008	15	6.39
2	09.08.2008	18.08.2008	11	3.48
3	23.11.2008	11.12.2008	19	4.86
4	30.04.2008	04.05.2008	05	1.07
5	02.06.2009	15.06.2009	14	3.78
6	19.12.2009	22.12.2009	04	1.31
7	09.02.2010	04.03.2010	24	5.85
8	14.03.2010	08.04.2010	26	6.51
Total			118	33.25

(Source: Records of LNN)

¹⁹ From 22.02.2006 to 21.06.2006 and 8.11.2006 to 14.11.2006.

The untreated MSW including BMW was dumped outside in the open space as shown in the photograph below:



Untreated MSW including BM waste dumped outside in the open space

The Government did not furnish any reply in this regard.

6.2.7 Running of three major hospitals without proper incinerator

Rule 4 of BMW Rules stipulates that it is the duty of the every occupier of HCU generating BMW to take all steps to ensure that such waste is handled without any adverse effect on human health and environment.

Scrutiny of the records of the UPPCB revealed (July-August 2010) that SGPGI, Lucknow, Ira Medical College and Railway Hospital, Lucknow with 800, 633 and 250 beds respectively were running without a valid authorisation from UPPCB as these did not have proper incineration facility. Further, it was observed that in SGPGI bio medical waste was burnt in an open area. Thus, absence of proper incineration facilities in the above institutes/hospitals had the likely potential of adversely affecting human health and environment.

In reply, UPPCB intimated (August 2010) that notices were issued to all the concerned institutes/hospitals in August 2007. The reply meant nothing as no stipulated legal action was initiated against these hospitals even after lapse of three years.

The Government replied (August 2011) that BMW of SGPGI, Lucknow had never been burnt in an open area. There was a treatment plant for BMW in SGPGI with the facility of Incinerator, Autoclave, Shredder *etc.* Upgradation of the plant of SGPGI for more effective disposal of BMW was under process.

The reply of the Government was incorrect as UPPCB had already issued a notice on 20 August 2007 to SGPGI after conducting a site inspection on 20 July 2007. Besides, the Government did not offer any comment on legal action taken against above mentioned hospitals.

6.3 Recommendations

- *Identification of all the Health Care Units may be ensured and assessment of BMW generated may be made and attachment of all HCUs with incineration facilities may be ensured;*
- *UPPCB may ensure mandatory submission of a copy of log book detailing BMW collected, segregated and incinerated from occupier/operator; and*
- *All safety measures need to be taken for the staff handling BMW and working on the incinerator.*

CHAPTER 7

Plastics Manufacture and Usage

According to scientific researches, polythene/plastic takes more than 800 years to dissolve. Therefore, use of polythene contaminates soil, underground water and vegetation. GoUP had also circulated (July 2005) an excerpt of the judgement of the Allahabad High Court on the use of polythene.

7.1 Regulatory Frame Work, Policies and Strategies

The Plastics Manufacture, Sale and Usage Rules, 1999 (PM Rules) were framed under the provisions of EP Act, 1986 to regulate manufacture, recycling, use, collection, segregation, transportation and disposal of plastics. The PM Rules provide that no person shall manufacture carry bags or containers irrespective of its size or weight unless the manufacturer is registered with the State Pollution Control Board prior to commencement of production. PM Rules also provide that:

- No vendor shall use carry bags or containers made of recycled plastics for storing, carrying, dispensing, or packaging of foodstuffs;
- Carry bags and containers made of virgin plastic shall be in natural shade or white;
- The minimum thickness of carry bags made of virgin plastics or recycled plastics shall not be less than 20 microns;
- Carry bags and containers made of recycled plastic and used for purposes other than storing and packaging foodstuffs shall be manufactured using pigments colourants as per Bureau of Indian Standards (BSI) specifications; and
- Manufacturers shall print on each packet of carry bags as to whether these are made of "recycled material" or of "virgin plastic".

UPPCB is the authority for enforcement of the provisions of PM Rules. GoUP also enacted 'The Uttar Pradesh Plastic and other Non-Biodegradable Waste (Usage and Disposal Regulation) Act, 2000' effective from 1 November 2000, prohibiting disposal of plastic and non-biodegradable waste in the drainage and sewerage system. According to the State Act, LNN was made responsible for collection, segregation, transportation and disposal of plastic waste in City.

7.2 Planning and Implementation

To enforce the provisions of the PM Rules, UPPCB is required to prepare a comprehensive plan and programme and advise the State Government on any matter concerning the prevention, control or abatement of pollution. LNN should make action plans for collection, segregation, transportation and disposal of plastic waste in Lucknow City.

Scrutiny of records (July 2010) of UPPCB revealed that no comprehensive plan had been prepared except for the preparation of a Working Plan in December 2004 for conducting a special drive in which emphasis was laid on creation of awareness through leaflets, public address system, discussion in schools and organising rallies. Inspection of manufacturing and commercial establishments and banning use of plastic items under the PM Rules were also not planned as Regional Office, UPPCB had identified only 30 hotels and restaurants in City using plastic bags for foodstuffs while the DPR (February 2007) of MSW management had indicated that there were more than 470 such establishments²⁰ at that point of time. LNN had not taken concrete efforts in this regard.

Joint physical inspection (July 2010) conducted alongwith a representative of LNN, revealed that Gomtinagar drain was choked with plastic items and plastic waste collected at the STP, Daulatganj as shown in the photographs below:



Choking of Gomtinagar drain due to plastic items and waste collected at STP, Daulatganj

Thus, in the absence of proper segregation at collection point of MSW, stipulated disposal of plastic items waste was not effected.

²⁰ Hotel: 150; Restaurants: more than 200; and unregistered Dhabas: 120.

7.3 Ineffective Initiatives for Recycling of Plastic Waste

CPCB directed (June 2008) UPPCB for adoption of Rajkot model of segregation of plastics from MSW for its recycling and disposal. It also directed to explore the possibility of use of plastic waste in cement kilns and blast furnaces. Besides, the proposal for using plastic waste for construction of roads, as was being done in Bangaluru, was under consideration (April-June 2010) before the Urban Development and Environment Departments.

The Government was silent on the audit observations at *paragraph 7.2* and *7.3* above but replied (August 2011) that UPPCB had identified 33 units under the provisions of the Plastic Waste (Management and Handling) Rules, 2011 effective from February 2011. Further, in compliance to the above rules and direction issued by Hon'ble Supreme Court, four units, involved in the packing of *Pan Masala/Tobacco Gutka* in Lucknow with plastic material, had been directed to close down.

7.4 Recommendations

- *Proper and effective mechanism should be put in place for identification of manufacturers, sellers and users establishments of plastics by UPPCB and LNN; and*
- *Proper segregation and disposal facilities should be set up in the City.*

CHAPTER - 8

Management of Batteries

8.1 Regulatory Framework, Policies and Strategies

GoI made the Batteries (Management and Handling) Rules, 2001 (BM Rules) which is applicable to every manufacturer, importer, re-conditioner, assembler, dealer, recycler, auctioneer, consumer and bulk consumer involved in manufacture, processing, sale, purchase and use of batteries or components thereof. It is the duty of manufacturer, importer, assembler and re-conditioner to ensure that the used batteries were collected back and sent to the registered recyclers and no damage is caused to the environment during storage and transportation of such used batteries.

The designated authority for ensuring compliance with the provisions of BM Rules is UPPCB and an annual compliance status report is to be submitted to the CPCB by 30 April of every year.

8.2 Planning and Implementation

City has large establishments of the Army, Railway and Telecom departments in addition to several auto manufacturers, who are the bulk users/consumers of batteries. The number of vehicles in the City has also shown a marked increase during last few years. The lead used in batteries is hazardous and requires proper handling at all stages. Therefore, disposal and recycling of batteries, wherever required, should be done in units possessing environmentally sound technology compliant with the BM Rules, 2001 and to avoid emission of lead into atmosphere as also discharge of acid into the open and sewers.

Audit observed (July 2010) that:

- UPPCB had identified only five battery manufacturers in the City since BM Rules became effective and two of these five were closed;
- It failed to identify importers, re-conditioners, assemblers, dealers, recyclers, auctioneers and bulk consumers;
- UPPCB had also not maintained any record of inspections of these units in violation of the BM Rules; and
- Six monthly reports for the period 2005-06 to 2009-10, in respect of such identified establishments, had not been sent to CPCB (July 2010).

In the absence of proper identification, UPPCB failed to take the stipulated action against the unauthorised /illegal recyclers of used lead acid batteries.

In reply to audit, UPPCB stated (August 2010) that the stipulated actions could not be taken due to shortage of manpower.

While accepting the facts, the Government stated (August 2011) that the UPPCB had identified five manufacturers, granted authorisation to one handler and identified 16 operators at Lucknow and UPPCB was in the process of identifying importers, dealers, recyclers, auctioneers, consumers and bulk consumers and, if necessary, would initiate expert inventorisation through outsourcing.

8.3 Recommendations

- *UPPCB may ensure compulsory registration of each manufacturer, importer, re-conditioner, assembler, dealer, recycler, auctioneer and bulk consumer; and*
- *Online registration facilities may be provided.*

CHAPTER 9

Building Code

9.1 Regulatory Framework, Policies and Strategies

The National Building Code of India (Code) provides guidelines for regulating the building construction activities across the country. It serves as a Model Code for adoption by all agencies involved in building and construction works, be it Public Works Departments, other Government construction departments, local bodies or private construction agencies. The Code mainly contains administrative regulations, development control rules and general building requirements including materials, structural design, construction (including safety) and plumbing services.

The Code was first published in 1970 at the instance of Planning Commission. The Code was revised as National Building Code of India (NBC), 2005. Clause 1.3 of the building bye-laws, 2008 of UP provides that building construction activities should be done as per provisions enacted therein and items not covered under it would be executed as per the provisions of NBC of India 2005.

The Lucknow Development Authority was established in September 1974 under the UP Urban Planning and Development Act, 1973 (Act). It prepared (March 2005) a Master Plan 2021 (MP-2021) for the Lucknow Development Area. LDA is responsible for regulating all developmental activities within its jurisdiction. Lucknow Development Area is divided into 22 Zones. LDA is responsible for enforcing provisions of the Act, MP-2021, Zoning Regulations and Building bye-laws.

9.2 Operational Management

Audit observations on the working of LDA were as under:

9.2.1 Non-adoption of building code

According to the information furnished by LDA (July 2010), the clauses of MP-2021 and Building bye-laws relating to the provisions of vacant areas/spaces in seven colonies²¹ developed by private builders under independent schemes were not adhered to. On this being pointed out in audit, LDA stated (July 2010) that action was proposed to be taken against these private builders.

²¹ (i) Alisha Nagar Colony (ii) Ashok Kumar Shukla Colony (iii) *Awadh Sahkari Awas Sangh* (iv) *Saath foot Road Jankipuram Vistar Yojna* (v) Shivalik Vihar Colony (vi) United City Society and (vii) *Voltas Sahkari Karmchhari Samiti*.

The Government replied (August 2011) that LDA had admitted non-compliance to the norms of open space in all the seven colonies developed by private builders due to non-regularisation of these unauthorized colonies.

9.2.2 Construction without environmental clearance

Under the Environment Protection Act, 1986, GoI notified (September 2006) that specific projects required environment clearance from the State level Environment Impact Assessment Authority (SEIAA) before the issue of 'No Objection Certificate' (NOC) by UPPCB.

Scrutiny of records (July 2010) of the SEIAA and further information collected (July-August 2010) from the other agencies²² revealed that five works (Estimated cost: ₹ 2381.86 crore) were allowed to be started by the UPPCB either without prior environment clearance or SEIAA's clearance as given in *Appendix-VII*.

The Government replied (August 2011) that environment clearance has been taken except for *Dr. B R Ambedkar Samajik Parivartan Sthal* because SEIAA informed that this project was not covered under Environment Impact Assessment Notification, 2006.

The reply was not correct as NOC was required from UPPCB for built-up area of less than 20,000 square meter and the *Dr. B R Ambedkar Samajik Parivartan Sthal*²³ falls under this category. Further, the Government did not offer (August 2011) any comment on allowing the construction without prior environment clearance from UPPCB and/or SEIAA.

Thus, UPPCB failed to implement the provisions of the Environment Protection Act, 1986 resulting in commencement of the construction works without the requisite prior environment clearance.

9.2.3 Non-Construction of Sewage Treatment Plant (STP) and garbage disposal places

As per Government order (November 1999) regarding model costing plan for housing development by Development Authorities and Housing boards, cost will include external development including construction of STP and Garbage Disposal Places (GDP). Again

²² Uttar Pradesh Rajkiya Nirman Nigam and Directorate of Environment.

²³ As per the statement of UPRNN, Lucknow, the covered area is 8836.14 square meter.

in September 2005, while issuing development housing policy, the Government not only reiterated the above provision but also fixed the cost at the rate of ₹ 18 and ₹ 24 per square meter respectively of gross area of the plot.

Scrutiny revealed (July 2010) that LDA and UP Housing Board (UPHB) developed many housing colonies but neither constructed STP and GDP nor reserved any land for their construction in colonies developed by them. As a result, most of the untreated sewage waste was disposed through drainage system into the river Gomti and garbage generated by these colonies was littered on surrounding roads and pavements.

The Government replied (August 2011) that the construction works of Sewerage Pumping Station (SPS) was in process under Kanpur Road Scheme and design work for STP was also in progress. It was further stated that tender had been accepted for construction of STP under Hardoi Road Scheme but work was not started due to agitation of farmers.

No reply was furnished by UPHB.

Thus, housing colonies were developed overlooking the environmental aspects and despite provisions in the plan and availability of funds. The failure of UPHB and LDA to construct STP and GDP in the colonies developed by them led to augmentation of pollutants in the river Gomti.

9.2.4 Absence of rain water harvesting system

Clause 2.1.2.5(ch) of the Building bye-laws made installation of Rain Water Harvesting (RWH) System compulsory in all housing schemes developed by Government agencies/private builders/cooperative societies. For plots less than 300 square meter area, a common RWH system was required whereas for 300 square meter or more, owners were required to make arrangements of their own in the absence of a common RWH system.

Scrutiny (July 2010) revealed that LDA had not developed a common RWH system in any of its housing schemes. LDA replied (August 2010) that a survey was being done to verify the installation of RWH system in the plots of more than 300 square meter.

The Government replied (August 2011) that during 2005-10 LDA constructed RWH system in 176 Government and semi-Government buildings and in 724 buildings with more than 300 square meter area but the Government was silent about the construction of common RWH system which was required for plots of less than 300 square meter area.

9.2.5 Unverified Plantation by LDA

According to Clause 2.2.3 of Building Bye Laws of UP, 2008, actual plantation, as per approved layout plans, is required to be ensured at the time of issuance of Completion Certificate by LDA.

The area under LDA was divided into 11 zones, where plantations were to be carried out in accordance with the Building Bye-laws. According to the information provided (July 2010) by LDA, zone-wise plantation was as under:

- In Zone-I, plantation was carried out in the parks only;
- In Zone-II,V,VI,VII and IX, no plantation was taken up;
- In Gomti Nagar Extension Yojna of Zone III, plantations in parks and in the green belt at the embankment of roads were carried out; and
- In Sharda Nagar Yojna of Zone-IV, out of a total number of 25132 trees planted during 2005-10, 10,926 trees, constituting 43 *per cent*, were reported dead by LDA.

In reply, the Government stated (August 2011) that LDA planted 4.44 lakh plants during 2005-10 which included 2.27 lakh plants during 2005-08. But the Forest Department in its reply intimated (August 2011) that LDA had planted only 1.23 lakh plants during 2005-08.

Thus, information provided by the LDA and Forest Department to the Government as well as to audit was inconsistent. Besides, no specific reply regarding zonewise plantation and their survival was provided.

9.3 Recommendations

- *Land should be earmarked for construction of garbage disposal and STP for the colonies developed by LDA and private builders; and*
- *Construction should not be allowed without the prior stipulated environment clearance.*

CHAPTER 10

Conclusion

The UPPCB was the main agency for enforcement of Environmental Laws in the State and responsible for formulation of policy for prevention, control or abatement of pollution which was not done effectively as discussed in the previous chapters. Similarly, other agencies like LNN, LJS, LDA, Transport, Police and Forest departments also did not discharge their responsibilities in its relation to prevention and control of pollution under relevant Acts effectively.

During 2005-10 UPPCB did not carry out test of drinking water in residential and commercial areas and failed to identify the total number of industries operating in the Lucknow City for its inspection as per provision of Water Act 1974. Despite its mandate, UPPCB did not plan a comprehensive programme for prevention and control of air pollution in Lucknow City since its inception in 1975. There was lack of modern equipment and non-upgradation of emission checking equipment with UPPCB, RTO and Traffic Police.

LNN did not adhere to the implementation schedule for the management of MSW even after a lapse of more than seven years from the scheduled date of implementation (December 2003). LNN did not take effective steps for manpower planning and provision of suitable equipment for handling of MSW in accordance with the MSW Rules. The UPPCB also failed to take action against Health Care Units including State owned SGPGI not attached with any CBWTF. Lack of co-ordination of UPPCB with various Government agencies to identify the existing Health Care Units in Lucknow City under BMW rules resulted in unreliable assessment of BMW generated in the City.

UPPCB failed to discharge its duty in respect of registration of carry bag manufacturing units and was not able to identify the manufacturers, sellers, and users to verify their compliance with the environmental standards. LNN also failed to ensure segregation, recycling and disposal of plastics waste, which resulted in choking of drains and sewerage system. Failure of LNN to identify the manufacturers, dealers, sellers, recyclers and bulk consumers of batteries, resulted in non-compliance of the BM Rules, 2001 even after nine years of its enactment. LDA did not ensure the planned development of Lucknow City based on Building Bye-laws and Zoning Regulations provided in the Lucknow Master Plan 2021. Massive constructions were allowed to be taken up by the UPPCB without prior environment clearance from SEIAA.

Thus, the Environmental Laws were not complied with effectively in Lucknow City.

CHAPTER 11

Gist of Recommendations

- *A detailed Action Plan should be prepared to improve air and water quality;*
- *UPPCB should establish more and upgraded air quality monitoring stations in new areas of the City;*
- *LNN should provide requisite and adequate infrastructure for disposal of sewage;*
- *Safai Karamchari involved in collection of MSW should be provided with Personal Protection Equipment;*
- *Proper and effective mechanism should be put in place for identification of manufacturers, sellers and users of plastics;*
- *Requisite land should be earmarked for construction of garbage disposal and STP for the colonies developed by LDA and private builders; and*
- *No construction activities should be allowed without prior environment clearance as envisaged in the Environment Protection Act.*



(MUKESH P SINGH)

Principal Accountant General (Civil Audit)
Uttar Pradesh

ALLAHABAD

The

04 MAR 2012

COUNTERSIGNED



(VINOD RAI)

Comptroller and Auditor General of India

NEW DELHI

The

06 MAR 2012

APPENDIX 1

(Paragraph No.: 1.2; Page-02)

Comparative analysis : International Best Practices, Central and State Environmental Laws

Subject	International convention/ conference on environment	Legislative enactment by GoI	Legislative enactment by GoUP
Water Pollution	World Commission on Sustainable Development 1992	- The Water (Prevention and Control of Pollution) Act, 1974, amended in 1988. - The Water (Prevention and Control of Pollution) Cess Act, 1977. - The Central Pollution Control Board (CPCB) was created under the Water (Prevention and Control of Pollution) Act, 1974 on 03 February 1975.	- The UPPCB was created under the Water (Prevention and Control of Pollution) Act, 1974 on 03 February 1975. - Adopted by GoUP since 1977.
Air Pollution	- United Nations Conference on Human Environment (UNCHE), Stockholm, 1972 - Vienna Convention on the Protection of Ozone Layer 1985 - Male Declaration on Control and Prevention of Air Pollution and its trans-boundary effects (1988).	- The Air (Prevention and Control of Pollution) Act, 1981, amended in 1987. - NAAQS Notified in April 1994.	Adopted by GoUP since 13 July 1982.
Waste Management	- UNCHE, Stockholm, 1972 - Basel Convention in 1989 on Control of Trans-boundary movements of Hazardous wastes and their disposal. - European Union Directive on Waste Management focused on the “reduce, reuse and recycle” principle.	- The Environment (Protection) Act, 1986 amended in 1991. - Municipal Solid Waste (Management and Handling) Rules 2000. - Bio-Medical Waste (Management and Handling) Rules 1998. - The Plastic Manufacture, Sale and Usage Rules, 1999. - The Batteries (Management and Handling) Rules, 2000.	- The Uttar Pradesh Plastic and other Non-Biodegradable Waste (Usage and Disposal regulation) Act 2000. - Adopted by GoUP. - The Uttar Pradesh Plastic and other Non-Biodegradable Waste (Usage and Disposal regulation) Act 2000. - Adopted by GoUP.
Building Code	NA	National Building Code 2005	- The Uttar Pradesh Urban Planning and Development Act, 1973. - Building bye-laws 2000 amended in 2008.

(Source: Environment and Climate Change Auditing guidelines 2010, Central and State Acts, Laws and Rules)

APPENDIX 2

(Paragraph No.: 2.1.1; Page-07)

Allotment and expenditure of Environment Department

(₹ in crore)

Year	Allotment*			Expenditure			Savings			Total Expenditure of State ¹	Percent-age of the total expenditure of the State
	R	C	T	R	C	T	R	C	T		
2005-06	82.81	80.03	162.81	2.78	11.30	14.08	80.03	68.70	148.73	55328	0.025
2006-07	82.95	80.00	162.95	2.93	0.00	2.93	80.02	80.00	160.02	69683	0.004
2007-08	93.26	82.00	175.26	3.32	0.00	3.32	89.94	82.00	171.94	82174	0.004
2008-09	88.62	80.65	169.27	2.93	0.00	2.93	85.69	80.65	166.34	98315	0.003
2009-10	15.55	0.05	15.60	4.11	0.05	4.16	11.44	0.00	11.44	114465	0.004
2010-11	9.66	0.00	9.66	3.11	0.00	3.11	6.55	0.00	6.55	127948	0.002

(Source: Appropriation Accounts)

R: Revenue, C: Capital, T: Total

*including allotment of Taj Trapezium Zone project

¹ Excluding disbursement of loans and advances.

APPENDIX 3

(Paragraph No.: 3.2.1; Page-14)

Results of drinking water sample tests (Bacteriological) conducted by the IITR, Lucknow

Area	Location	Location-wise analysis of samples		Source-wise analysis of samples			
				Piped water supplied		Ground water supplied	
		Analysed	Contaminated (per cent)	No. of samples analyzed	contaminat ed samples (per cent)	No. of samples analyzed	Contam- inated (per cent)
Commercial	Aminabad	10	5	15	10(67)	15	03(20)
	Chowk	10	4				
	Hazratganj	10	4				
	Total	30	13(43)				
Industrial	Aishbagh	10	2	15	03(20)	15	05(33)
	Amausi	10	3				
	Talkatora	10	3				
	Total	30	8(27)				
Residential	Alambagh	10	2	20	8(40)	20	05(25)
	Aliganj	10	6				
	Gomti Nagar	10	2				
	Indira Nagar	10	3				
	Total	40	13(33)				
Grand total		100	34(34)	50	21(42)	50	13(26)

(Source: IITR)

APPENDIX 4

(Paragraph No.: 3.2.2.1; Page-16)

Pollution level of River Gomti

Sl. No.	Sampling Point of River Gomti	2006			2007			2008			2009			2010		
		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
1.	Dadhnamau Ghat Sitapur Upstream	8.2	1.7	1391	7.8	1.5	1967	7.9	1.9	779	8.0	2.1	1866	8.0	2.3	1866
2.	Manjhighat, Lucknow	7.7	2.6	1983	7.0	2.4	2004	6.9	2.8	1957	7.5	2.6	2433	7.6	2.6	2383
3.	Gaughat Upstream water intake, Lucknow	7.2	2.9	3508	6.3	2.8	2859	6.3	3.1	3000	7.1	2.9	3683	7.3	2.9	3433
4.	Mohan Meakins down stream Lucknow	5.3	6.4	42583	4.5	6.3	34749	5.0	5.7	33142	6.0	4.3	28250	5.9	4.4	25833
5.	Nishatganj Bridge, Lucknow	3.1	6.9	68333	2.8	7.7	51665	3.4	7.4	65000	3.9	6.5	55250	3.9	6.7	63500
6.	Upstream of Barrage, Lucknow	1.7	8.6	96666	2.0	9.1	79999	2.3	8.9	95714	2.9	8.0	101833	3.0	8.2	105166
7.	Pipraghat, Lucknow (percentage higher than the Category 'C')	1.0	9.9 (330)	116666 (2333)	1.4	10.5 (350)	114998 (2300)	1.6	10.6 (353)	124255 (2485)	2.2	9.6 (320)	119833 (2393)	2.4	9.6 (320)	127500 (2550)

(Source: UPPCB)

A: Dissolved Oxygen (Mg/ltr); B: Bio Chemical Oxygen Demand (Mg/ltr); C: Total coliform (Most Probable Number/100ml)

APPENDIX 5

(Paragraph No.: 3.2.2.2; Page-18)

Expenditure on Lucknow sewerage works under JNNURM in 40 wards

(₹ in crore)

Sl. No.	Name of Schemes	Sanctioned Cost	Funds released	Works proposed	Total	Expenditure	Remarks
1.	Lucknow Sewerage Scheme, District-I	2.36	2.36	Branch Sewer Trunk Sewer SPS 56mld STP – 14mld	283 Km 54 Km 1No. 1 No.	1.76	STP commissioned
2.	Lucknow Sewerage Scheme, District-III Part-I	2.62	1.05	Trunk Sewer Branch Sewer SPS R.M.	91 km 394km. 1 No. 3000m	1.01	Under progress. Schedule of completion is March 2012
3.	Lucknow Sewerage Scheme, District-III Part-II	2.14	0.54	Trunk Sewer Branch Sewer SPS R.M.	42 km 310 km 3 No. 3375m	0.54	Under progress. Schedule of completion is March 2012
Total		7.12	3.95			3.31	

(Source: Jal Nigam)

APPENDIX 6

(Paragraph No.: 4.2.1; Page-24)

National Ambient Air Quality Standard and level of SPM and RSPM in the air of Lucknow City during 2006-10

Name of location	Criteria/ Activity	Standard norms		2006 ($\mu\text{g}/\text{m}^3$)		2007 ($\mu\text{g}/\text{m}^3$)		2008 ($\mu\text{g}/\text{m}^3$)		2009 ($\mu\text{g}/\text{m}^3$)		2010 ($\mu\text{g}/\text{m}^3$)	
		SPM	RSPM	SPM	RSPM	SPM	RSPM	SPM	RSPM	SPM	RSPM	SPM	RSPM
Hazarathganj	Commercial	140	60	393	186	385.1	180.2	386.5	181.6	400	190	384	186
Mahanagar	Residential			387	182	385.3	183.5	378.7	185.7	401	189	380	185
Aliganj	Commercial			400	186	402.4	192.7	403.2	190.0	414	196	400	194
Aminabad	Residential			407	195	396.5	189.7	380.9	186.0	404	192	388	189
Talkatora	Industrial	360	120	419	200	414.1	200	424	202.2	436	210	412	199

(Source: CPCB and UPPCB) SPM: Suspended Particulate Matter ; RSPM: Respirable Suspended Particulate Matter

APPENDIX 7

(Paragraph No.: 9.2.2; Page-56)

Status of works started without Environmental Clearance

(₹ in crore)

Sl. No.	Name of the work	Estimated cost	Expenditure up to June 2010	Date of start of work	Date of Completion	NOC issued by UPPCB	Date of issuing EC as per SEIAA
1.	Indira Gandhi Prathisthan, Gomti Nagar	154.77	141.00	February 2005	Work in progress	12.12.08	24.08.11
2.	New Jail Parisar, Mohanlal ganj	327.97	254.87	October 2008	--do--	03.07.09	28.08.09
3.	Dr Ram Manohar Lohia, Law University	244.14	241.47	March 2006	--do--	25.08.08	10.07.10
4.	Dr Shakuntala Mishra Rehabilitation University	398.25	103.53	December 2008	--do--	18.06.10	31.5.10
5.	Dr BR Ambedkar Samajik Parivartan Sthal	1256.73	977.91	July 2007	--do--	25.08.08	Not issued
	Total	2381.86	1718.78				

(Source: UPRNN)

List of Abbreviations

BOD	:	Biochemical Oxygen Demand
BMW	:	Bio-Medical Waste
BOE	:	Brick on Edge
BSI	:	Bureau of Indian Standards
CBWTF	:	Common Bio-medical Waste Treatment Facility
CFC	:	Chloro Fluoro Carbon
CMO	:	Chief Medical Officer
CNG	:	Compressed Natural Gas
CPCB	:	Central Pollution Control Board
DFO	:	Divisional Forest Officer
DIC	:	District Industries Centre
DO	:	Dissolved Oxygen
DOE	:	Directorate of Environment
DPR	:	Detailed Project Report
EC	:	Environment Clearance
EPCA	:	Environment Pollution Control Authority
ETP	:	Effluent Treatment Plant
GDP	:	Garbage Disposal Place
GoI	:	Government of India
HCU	:	Health Care Unit
JNNURM	:	Jawaharlal Nehru National Urban Renewal Mission
LDA	:	Lucknow Development Authority
LJS	:	Lucknow Jal Sansthan
LNN	:	Lucknow Nagar Nigam
MLD	:	Million Litre Daily
MoEF	:	Ministry of Environment and Forest

MP	:	Master Plan
MSW	:	Municipal Solid Waste
NAAQM	:	National Ambient Air Quality Monitoring
NAAQS	:	National Ambient Air Quality Standard
NBC	:	National Building Code
PPE	:	Personal Protection Equipment
PUC	:	Pollution Under Control
RCUES	:	Regional Centre for Urban and Environment Studies.
RO	:	Regional Officer
RSPM	:	Respirable Suspended Particulate Matter
RTO	:	Regional Transport Officer
RWH	:	Rain Water Harvesting
SEAC	:	State Level Environment Appraisal Committee
SEIAA	:	State level Environment Impact Assessment Authority
SGPGI	:	Sanjay Gandhi Post Graduate Institute
SPM	:	Suspended Particulate Matter
SPS	:	Sewerage Pumping Station
SSP	:	Senior Superintendent of Police
STP	:	Sewage Treatment Plant
SWMP	:	Solid Waste Management Project
UPJN	:	Uttar Pradesh Jal Nigam
UPPCB	:	Uttar Pradesh Pollution Control Board
UPRNN	:	Uttar Pradesh Rajkiya Nirman Nigam
UPSBC	:	U P State Bridge Corporation
UPSHB	:	Uttar Pradesh State Housing Board