CHAPTER 6

Compliance to rules governing municipal solid, bio-medical and plastic waste

Objective 5: Whether effective compliance to rules/laws regulating municipal solid waste, bio-medical waste and plastic waste was taking place in the state.

The United Nations Conference on Human Environment held in Stockholm in June 1972 led to decision on part of India to enact a law on the protection of the environment. As a result, the Environment (Protection) Act was promulgated in 1986 in order to take appropriate steps for the "*protection and improvement of human environment*" and to implement decisions relating to "*protection and improvement of the environment and for the prevention of hazards to human beings, other living creatures, plant and property*". Though there is no specific provision addressing waste in this Act, the Act gave power to the central government to take measures for protecting the quality of the environment and preventing, controlling and abating environment pollution. It also defined environmental pollutant as any solid, liquid or gaseous substance present in such concentration to be injurious to the environment and environment pollution as the presence in the environment of any environment pollutant.

Realising the seriousness of the problem of waste management and therefore, to regulate the management and handling wastes in India, the government notified the following under the powers conferred by the Environment (Protection) Act, 1986:

- *Municipal Solid Wastes (Management and Handling) Rules, 2000*: The objective of this rule is to make every municipal authority, within the territorial area of the municipality, responsible for the implementation of the provisions of these rules, and for any infrastructure development for collection, storage, segregation, transportation, processing and disposal of Municipal Solid Wastes. The State Pollution Control Board was given responsibility for granting authorisation for setting up waste disposal facilities and monitoring to ensure that disposal of municipal solid waste meets the compliance criteria set out by the Central Pollution Control Board in the rule.
- To ensure proper *Bio-Medical Waste Management*, The Bio-Medical Waste (Management and Handling) Rules, were notified in 1998 with an amendment in 2003.The institutions generating bio medical waste were given the responsibility of ensuring that all such waste is segregated, transported, processed and disposed off without any adverse effect to human health and the environment. It had set up a time schedule for ensuring that institutions set up waste disposal and processing facilities that were to be authorised by a body to be set up by the state governments and compliance to the waste disposal methods as specified in the rules were to be monitored by the PCBs.

- The *Recycled Plastics Manufacture and Usage Rules* were notified in 1999 with an amendment in 2003. The responsibility for enforcement of rules relating to use, collection, segregation, transportation and disposal of plastic waste was entrusted to the District Commissioner/ District Magistrate of each district and SPCBs were given the responsibility for monitoring of these rules.
- The *Hazardous Waste (Management & Handling) Rules* were notified in 1989 with amendments in 2000 and 2003. The role and responsibilities of the waste generator, state/central pollution controls boards and state Government was clearly defined in these rules. The rules were further amended in 2000, placing stringent curbs on the export and import of waste into India.

Compliance to rules governing municipal solid waste (Municipal Solid Wastes (Management and Handling) Rules, 2000), bio-medical waste (The Bio-Medical Waste (Management and Handling) Rules) and plastic waste (The Recycled Plastics Manufacture and Usage Rules) were studied in 20 states across India. The PA also sought to check compliance with the rules governing management and disposal of municipal solid waste, bio-medical waste and plastic waste in 56 municipalities in 20 states and 180 hospitals in 15 states, which were audited to verify implementation and monitoring of municipal solid waste, bio-medical waste and Recycled Plastics Manufacture, and Usage rules. Audit observations regarding role of MoEF, state governments and municipalities/hospitals/districts are brought out in the succeeding paragraphs.

6.1 At the Central level

Though MoEF had notified the waste rules but the implementing agencies specified in these rules like municipalities, hospitals and district authorities did not fall into the administrative or financial control of MoEF. As such, MoEF did not have the powers to ensure compliance by these implementing agencies. Thus, coordination with the ministries under whose administrative jurisdiction these agencies fall was crucial for ensuring better implementation of waste rules and in ensuring that waste management received the desired thrust and emphasis by the government.

Municipalities responsible for the implementation of the Municipal Solid Waste Rules came under the administrative control of the Ministry of Urban Development (MoUD); support of MoUD would be essential in ensuring better compliance to Municipal Solid Waste Rules. Similarly, hospitals fell under the overall jurisdiction of the Ministry of Health and Family Welfare (MoH&FW) and support of MoH&FW would be crucial in ensuring better compliance to the Bio-Medical Waste Rules. Though MoEF stated that it had approached MoUD and MoH&FW for taking action on implementation of municipal solid waste rules and bio-medical waste rules respectively, however no records were produced to enable Audit to verify the proposed action by MoEF and to determine whether these ministries had complied with the action proposed by MoEF.

Thus, the role of MoEF was reduced to making rules for the handling and disposal of municipal solid waste and bio-medical waste, without being aware whether the

rules were properly implemented or required modification in light of difficulties faced during implementation.

6.2 At the level of the states

6.2.1 Compliance to Municipal Solid Wastes (Management and Handling) Rules, 2000

The Municipal Solid Wastes (Management and Handling) Rules, 2000, in Rule 4 and 5 allocated responsibilities to state governments and municipal authorities of the states for proper management of municipal solid waste.

According to Rule 4, every municipal authority shall, within the territorial area of the municipality, be responsible for the implementation of the provisions of these rules, and for any infrastructure development for collection, storage, segregation, transportation, processing and disposal of municipal solid wastes. In addition, the municipal authority or an operator of a facility had to make an application for the grant of authorisation for setting up waste processing and disposal facility including landfills from PCB of the state. According to Rule 5, the state government shall have complete responsibility for the enforcement of the provisions of these rules. According to Rule 6, PCB of a state shall be responsible for monitoring compliance and issuing authorisations for waste processing and disposal facilities. Thus, the rules only state the specific action to be taken by municipalities and PCBs but do not lay down specific action to be taken by the state governments. According to the rules, the state government shall be responsible only for the enforcement of the provisions of these rules. Thus, the role of the state government in planning and setting up of waste processing and disposal facilities was negligible and as such, the state government cannot be held responsible if municipalities do not have a waste management plan in place or if municipalities do not set up municipal solid waste management systems.

Audit observations relating to compliance to municipal solid waste rules by 56 sampled municipalities in 20 states is discussed below:

(a) Authorisation

According to Rule 4(2), the municipal authority or an operator of a facility shall make an application for grant of authorisation for setting up waste processing and disposal facility including landfills from the State PCB and the state PCB shall issue the authorisation after stipulating compliance criteria. Hence, municipal solid waste rules envisage that all waste processing and disposal facilities should be set up after authorisation from the state PCB.

It was noticed in audit that out of the 56 sampled municipalities, in 59 *per cent* of the sampled municipalities, waste processing/disposal facilities were running without authorisation from PCB. It was also seen that sampled municipalities in ***Jharkhand, UP, Meghalaya, Assam, Punjab, Maharashtra, Orissa, Uttarakhand, Bihar, West Bengal, Tamil Nadu, Chhattisgarh*** and ***Andhra Pradesh*** were running waste disposal facilities without authorisation from PCBs.

Waste processing and disposal facilities, which were running without authorisation from PCBs, might cause harm to health as well as contamination to the environment as there was no assurance of following the compliance criteria that have to be met by the municipality. Thus, waste processing and disposal facilities running without authorisations were a matter of concern.

(b) Collection

The implementation schedule (Schedule II) in the municipal solid waste rules specified activities to be taken by the municipality/operator to ensure that all waste that is generated in the municipality is collected. This would ensure that uncollected waste would not pose risks to health and contaminate the environment. It was verified in audit whether the 56 sampled municipalities carried out the activities related to collection of municipal solid waste as specified in the implementation schedule. The results are depicted in the table below:

Activities related to collection of municipal solid waste to be done by municipality/operator	**Done**	**Not done**	**Not verifiable**	**Total**
1. Organise house-to-house collection of municipal solid wastes on a regular basis.	21	19	16	56
Most complete collection in *Karnataka, Kerala, Andhra Pradesh*; in *West Bengal, Rajasthan*, though all municipalities organised house-to-house collection, all the wards were not completely covered.				
2. Collect waste from slums and squatter areas or localities including hotels, restaurants, office complexes and commercial areas on a regular basis.	12	7	37	56
Most complete collection in *Karnataka.*				
3. Collect regularly wastes from slaughter houses, meat and fish markets, fruits and vegetable markets, which are biodegradable in nature.	19	10	27	56
Most complete collection in *Karnataka, West Bengal, Maharashtra*				
4. Ensure that bio-medical wastes and industrial wastes are not mixed with municipal solid wastes.	9	13	34	56
Ensured largely by *Karnataka* and *Uttar Pradesh*				
5. Ensure that horticultural and construction or demolition wastes or debris are collected separately regularly.	8	23	25	56
Most completely in *Karnataka, Uttarakhand* and *Bihar*				
6. Notify waste collection schedule and the likely method to be adopted for public benefit in a city or town.	13	25	18	56
Most complete in *Karnataka* and *Kerala,*				
7. Ensure waste (garbage, dry leaves) are not burnt.	4	17	35	56
This action was difficult to verify as few municipalities had issued instructions but it was not possible to verify follow-up action.				
Total	86	114	192	392
Per cent	22	29	49	

Thus, it can be seen that only in 22 *per cent* of the municipalities, waste was collected and in 29 *per cent* municipalities, the municipal authorities could not ensure regular collection of waste as envisaged in the municipal solid waste rules. The activities for collection organised by the municipalities was ineffective as out of sampled municipalities, waste was being regularly collected only in nine municipalities, i.e., only in 16 *per cent* of the sampled municipalities.

(c) Segregation

The implementation schedule (Schedule II) in the municipal solid waste rules specified activities to be taken by the municipality/operator to ensure that segregation of municipal solid waste takes place. This would ensure that collected waste is segregated and processed accordingly; with the organic waste being processed (by composting, pelletisation etc,.) and non-organic waste being disposed in landfills. It was checked in audit whether the 56 sampled municipalities carried out the activities related to segregation of municipal solid waste as specified in the implementation schedule. The results are depicted in the table below:

Mixing of construction debris with municipal solid waste at open dump site in Karnataka

Activities for segregation to be done by municipalities	**Done**	**Not done**	**Not verifiable**	**Total**
1. Organisation of awareness programmes for segregation of wastes.	12	26	18	56
Done completely in sampled municipalities in *Karnataka* and *Kerala*				
2. Holding regular meetings at quarterly intervals with representatives of local resident welfare associations and non-governmental organisations to ensure community participation in waste segregation.	10	24	22	56
Done completely in sampled municipalities in *Maharashtra* and *Kerala*				
Total	**22**	**50**	**40**	**112**
Per cent	***20***	***44***	***36***	

Thus, it is evident from the table above that only 20 *per cent* of the selected municipalities organised awareness programmes and 44 *per cent* did not. This is reflected in the fact that out of 56 municipalities, segregation was taking place only in 10 *per cent* of the sampled municipalities and segregation was not taking place in 73 *per cent* of the sampled municipalities.

Thus, segregation at source was not taking place, leading to different kinds of waste being mixed together for dumping. This would limit the possibility for processing of recyclable waste.

(d) Storage

The implementation schedule (Schedule II) in the municipal solid waste rules specified activities to be taken by the municipality/operator to ensure that storage of municipal solid waste takes place, after collection and segregation and before it is transported for processing and disposal. This would ensure that collected and segregated waste is properly stored, in a manner not to cause any hazards to public health or to the environment. Municipal authorities, according to the schedule, should establish and

maintain storage facilities in such a manner, that they do not create unhygienic and unsanitary conditions around it. It was checked in audit whether the 56 sampled municipalities carried out the activities related to storage of municipal solid waste, as specified in the implementation schedule. The results are depicted in the table below:

Activities for storage to be undertaken by the municipality	**Done**	**Not done**	**Not verifiable**	**Total**
1. Storage facilities established based upon the quantities of waste generated	12	22	22	56
Most complete in *Himachal Pradesh, Karnataka, Kerala* and *Uttarakhand*				
2. Storage facilities so designed that wastes stored are not exposed to open atmosphere and are aesthetically acceptable and user-friendly.	9 (includes 2 municipalities in Kerala which are bin free[18] cities)	27	20	56
Performance of most municipalities poor				
3. Bins for storage of biodegradable wastes have been painted green, those for storage of recyclable wastes painted white and those for storage of other wastes painted black.	8	33	15	56
Most complete in the sampled states of *Gujarat, Maharashtra* and *Kerala*				
4. Storage facilities set up by municipal authorities attended daily for clearing of wastes and the bins or containers cleaned before they start overflowing	8 (includes 2 municipalities in Kerala which are bin free cities)	17	31	56
Most complete in sampled municipalities in *Kerala* and *Assam*				
Total	**37**	**99**	**88**	**224**
Per cent	***17***	***44***	***39***	

It can be seen that performance of the sampled municipalities in ensuring proper storage of collected waste was very poor; with only 17 *per cent* municipalities able to ensure proper storage and 44 *per cent* unable to ensure proper storage.

In addition, it was noticed that out of 56 sampled municipalities, manual handling of waste was taking place in 33 municipalities (59 *per cent*) while it did not take place in four (7 *per cent*) municipalities. In rest of the 19 municipalities, it could not be verified whether manual handling of waste was taking place. In the 33 municipalities where manual handling of waste was taking place, only 24 *per cent* had taken proper precautions for safety of workers, 55 *per cent* had not done so and it was not verifiable whether any precautions was taken by seven municipalities (21 *per cent*) where manual handling of waste was taking place.

Manual Handling of Waste in Karnataka

Evidently, waste was not being properly stored which would lead to unhygienic conditions, causing problems to health and contamination of the environment. The

[18] Daily collection of waste ensures that no rubbish collects and thus, no bins are needed.

problem of poor storage of waste was further compounded by non clearing of storage bins on a daily basis.

(e) Transportation

The implementation schedule (Schedule II) in the municipal solid waste rules specified activities to be undertaken by the municipality/operator to ensure that transportation of municipal solid waste for processing/disposal takes place in a hygienic manner and does not cause littering of waste. It was checked in audit whether the 56 sampled municipalities carried out the activities related to transportation of municipal solid waste, as specified in the implementation schedule.

It was seen that out of 56 sampled municipalities, only 18 *per cent* of sampled municipalities were using covered trucks for transportation and 43 *per cent* were not using covered trucks. Position was not verifiable in case of the remaining 39 *per cent*.

Thus, usage of uncovered trucks would cause scattering and result in the collected and stored waste not reaching the destination point for processing/disposal.

(f) Processing

The implementation schedule (Schedule II) in the municipal solid waste rules specified that municipal authorities adopt suitable technology or combination of such technologies to make use of wastes to minimise burden on landfill. Criteria to be followed included composting, vermi-composting, anaerobic digestion or any other appropriate biological processing for biodegradable waste. Incineration with or without energy recovery including pelletisation could also be used for processing wastes in specific cases. Municipal authority or the operator of a facility wishing to use other state-of-the-art technologies had to approach CPCB to get the standards laid down before applying for grant of authorisation. The role of municipalities in relation to establishment of processing facilities was examined in audit in 56 sampled municipalities. The results are depicted in the table below:

Activities for processing of waste to be undertaken by the municipality	**Done**	**Not done**	**Not verifiable**	**Total**
1. Biodegradable wastes processed by composting, vermi-composting, anaerobic digestion or any other appropriate biological processing for stabilisation of wastes.	10 (includes partial composting in 1 municipality in Karnataka, 2 composting plants in Orissa out of which 1 is defunct.	33	13	56
Composting was only taking place in sampled municipalities of *Kerala, Karnataka, Delhi, Orissa* and *Himachal Pradesh*.				
2. Use of incineration with or without energy recovery including pelletisation for processing wastes in specific cases	1	43	12	56
Only 1 sampled municipality in *Gujarat* created this facility				
3. Waste processing or disposal facilities include composting, incineration, pelletisation, energy recovery or any other facility duly approved by	7	39	10	56

Activities for processing of waste to be undertaken by the municipality	Done	Not done	Not verifiable	Total
CPCB.				
Only composting was taking place in states like *Kerala* and *Karnataka*. No other method of waste processing was adopted.				
Total	**18**	**115**	**35**	**168**
Per cent	***11***	***68***	***21***	

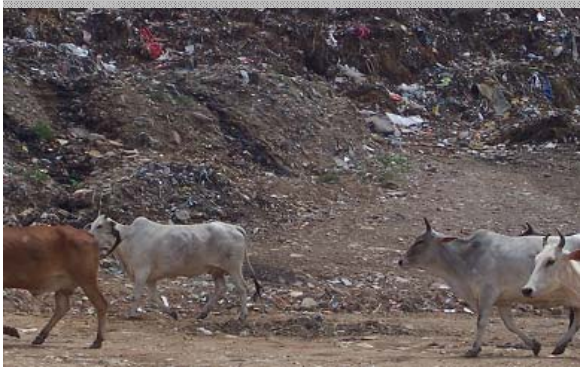
It can be seen that waste processing facilities were almost non existent; with only 11 *per cent* municipalities having waste processing capabilities while a huge 68 *per cent* did not have any waste processing facilities. Only municipalities in *Kerala*, *Karnataka*, *Delhi*, *Orissa*, *Gujarat* and *Himachal Pradesh* had compost plants for processing of waste. Thus, hardly any waste processing facilities existed in the selected municipalities. This would only aggravate the landfilling operations.

(g) Disposal

The implementation schedule (Schedule II) in the municipal solid waste rules specified that landfilling should be restricted to non-biodegradable, inert waste and other waste that are not suitable either for recycling or for biological processing and that landfilling of mixed waste should be avoided. The implementation schedule specified that landfilling should be done only under unavoidable circumstances or till installation of alternate facilities and that landfilling should be done following norms given in Schedule–III of the rule. 56 municipalities were test checked to study their actions in relation to the objectives specified in the implementation schedule. Even though it was envisaged in audit that landfills would be studied to see whether all the specifications, as given in the rules, were being met, however, none of the sampled municipalities had sanitary landfills. As a result, no landfill was subject to audit scrutiny.

Rag-pickers in the open dumpsite at Bhalaswa, Delhi

Cows in the open landfill site at Okhla, Delhi



It was seen in audit that only six landfills were established in the sampled 56 municipalities and the states resorted to dumping of waste in open dumpsites. The waste disposal infrastructure (landfills/open dumpsites) in the states sampled for municipal solid waste rules is shown in the table below:

State	Landfills (whole state)	Open dumpsites in selected municipality
Himachal Pradesh	0	3 in sampled municipalities, 14 in whole state

Jharkhand	0	NA
Karnataka	5	12 in sampled municipalities, 183 in whole state
Kerala	0	37 in whole state
Bihar	0	21 approx in whole state
Uttarakhand	0	3 in sampled municipalities, 68 in whole state
Assam	0	3 in sampled municipalities,
Delhi	0	3
Gujarat	0	4
Maharashtra	0	5
Orissa	0	6
Punjab	0	6
West Bengal	0	5 in sampled municipalities, 120 in whole state
UP	0	6
Meghalaya	0	1
Rajasthan	1	4
Tamil Nadu	0	4
Sikkim	0	3
Chhattisgarh	0	Not verifiable
AP	0	7

Thus, it can be seen that no landfills have been set up in the sampled states and waste was being dumped into open, unsanitary dumping grounds in the sampled states. This posed immense risks to public health as well as causing contamination of the environment.

The dumpsites needed to be monitored to make sure that the open dumping of waste did not cause contamination of the environment or spread disease in areas around the dumpsites. However, it was observed that out of the 20 sampled states:

- Monitoring of dumpsite took place only in ***Karnataka, Gujarat*** **and** ***Himachal Pradesh***.
- No monitoring of dumpsites was taking place in ***Meghalaya, Jharkhand*** and ***Uttarakhand***.
- In 14 states, though municipalities claimed that monitoring of dumpsites was taking place, no monitoring reports were produced to Audit to enable Audit to verify whether monitoring took place.

Thus, not only was waste being dumped in open areas, no monitoring of the dumpsite took place to verify whether these dumpsites caused contamination of the environment.

The status of disposal activities which had to be taken as per Schedule II of the municipal solid waste rules, by the sampled 56 municipalities is depicted in the table below:

Activities for disposal of waste to be undertaken by the municipality	**Done**	**Not done**	**Not verifiable**	**Total**
1. Municipal authorities ensured that landfilling is restricted to non-biodegradable, inert waste and other waste that are not suitable either for recycling or for biological processing.	5	45	6	56
As there was no segregation taking place, all kinds of waste was being dumped. Only *Gujarat* made				

Activities for disposal of waste to be undertaken by the municipality	Done	Not done	Not verifiable	Total
some attempts to send only non- biodegradable waste to dumpsites.				
2. Municipalities transferred or earmarked land for setting up sites for landfills.	13	15	28	56
Only *Karnataka, Gujarat* and *Kerala* have made attempts				
3. Municipality carried out improvement of existing landfill sites/ open dumpsites as per provisions of these rules by the due dates.	4	37	15	56
Only took place in *Delhi, Maharashtra* and *Karnataka*				
4. Municipality carried out identification of landfill sites for future use and making site (s) ready for operation by the due date.	12	25	19	56
Done only in *West Bengal, Karnataka* and *Kerala*				
5. Plan with municipalities to close the open dumpsites and move the waste to a sanitary landfill.	7	25	24	56
Plans exist only in *Delhi, Maharashtra, Karnataka* and *Kerala* municipalities.				
Total	**41**	**147**	**92**	**280**
Per cent	***14***	***53***	***33***	

It could be seen that the activities outlined in the Implementation Schedule for the development of landfills were carried out only in 14 *per cent* of the sampled municipalities and not done in 53 *per cent* municipalities. Thus, it is apparent that in the absence of waste processing and scientific landfilling, the open dumping of waste would continue; not only causing contamination of the environment but also public health hazard due to unsanitary conditions.

(h) Specific cases of violation in states

Some individual cases of violation of municipal solid waste rules noticed in the states are as under:

Orissa

- Berhampur municipality was granted (December 2002) authorisation by SPCB, Orissa to set up and operate waste processing and disposal facilities at a specified site. However, it was observed that the waste was not segregated and the municipality had not set up waste processing and disposal facilities till the date of audit. The storage points were located in a busy market and in a residential area and were exposed to stray animals, creating nuisance. Waste was transported in open vehicles through the

Bargarh Dumpsite situated inside residential area (Orissa)

residential areas and was dumped at the specified site. SPCB had also pointed out this violation in July 2007.

- Cuttack Municipal Corporation did not carry out segregation of wastes and the wastes were not processed before disposal. The municipal corporation had two compost plants both of which were lying defunct. Waste was being transported in open vehicles and dumped in an open site which was at the side of the road. PCB, in August 2007, had observed that violation of municipal solid waste rules was taking place and had urged the corporation to obtain authorisation from PCB for the development of waste processing and disposal facility.
- In Bhubaneshwar, unsegregated wastes were being transported in open vehicles and dumped in four open sites. Three of these were in residential areas and lacked space for further dumping. In these dumpsites, it was also found that unsegregated wastes were often burnt in the presence of municipal authorities. Though the municipal corporation was authorised in January 2004 to operate waste disposal facilities at Tulsideipur, Barang, the Municipal Corporation had not taken any steps for setting up this facility.

Chhattisgarh

- The Municipal Council of Bhatapara had not yet received authorisation for operation of waste disposal facilities due to non allotment of landfill site by district authority. As a result, waste is being dumped in three open dumpsites which posed a serious risk to health and environment. The Municipal Corporation in Raipur, Bhilai, Durg and Rajnandgaon had been authorised to set up and operate waste processing/disposal facilities at landfill site for composting but no composting is being carried out.

Gujarat

- It was noticed that there were 174 municipalities in the state but only 142 had sought and received authorisation for setting up waste disposal facilities. Only four municipalities had waste disposal facilities, three vermiculture and one composting plant. No secured landfill site was developed and commissioned in the state.

Punjab

- According to municipal solid waste rules, waste processing and disposal facilities were to be set up by the municipal authorities by December 2003 and the performance of these facilities was to be monitored once in six months. However, it was noticed that no waste processing and disposal facilities have yet been set up in the state till November 2007. Thus, open dumping of waste continues throughout the state in violation of the municipal solid waste rules. In addition, it was noticed in municipal corporations in Patiala and Amritsar that 81 *per cent* and 29 *per cent* of the vehicles transporting municipal solid

waste were uncovered leading to waste being exposed to the open environment and littering.

Karnataka

- Karnataka Compost Development Corporation (KCDC, a state government undertaking) was manufacturing compost by utilising the municipal solid waste from Bangalore City area. It had an installed capacity of 300 tonnes per day but was operating at only 150 tonnes per day. It was seen that the compost plant received more than 300 tonnes of waste per day, which was beyond the capacity of the plant. The excess waste was dumped in the premises. It was also noticed that the waste was unsegregated and uncovered. Due to huge accumulation of municipal solid waste, garbage had piled up to a height of 30 to 40 feet and leachate was flowing in an area that was close to a water body. Though KCDC had requested funds to buy additional machinery, the same was not provided to KCDC. According to municipal solid waste rules, waste processing facilities should be equipped with a leachate treatment system and leachate should not be let out. It was noticed that though Brahat Bangalore Mahanagar Palike had entrusted the work of laying of underground hume pipes, however the pipes were not laid even after a year.

Burning of waste at Udupi, Karnataka

- Udupi municipality authorities dumped unsegregated municipal solid waste into the Kalmadi riverbed sides during 2004-06. The riverbed, being a coastal regulation Zone III area, the dumping of waste there was in violation of provisions of Coastal Regulation Zone Act as well as EPA. The dumping resulted in blocking the natural flow of Kalmadi river. Department of Forest and Ecology and Karnataka Coastal Zone Management Authority had requested the Secretary, UDD to take action against the Commissioner, Udupi and take steps for the removal of the dumped waste. However, no action has been taken so far.

West Bengal

- Kolkata Municipal Corporation (KMC) dumped its collected municipal solid waste at Dhapa since 1980. Dhapa is located within the East Kolkata Wetlands, an internationally identified wetland under the Ramsar Convention and in the vicinity of four villages engaged in agriculture and fishing. On an average, KMC dumps 3000 tonnes of waste a day and there is no processing plant to reduce the load of waste dumped everyday. In April 2006, subsidence of a portion of a landfill area took place resulting in bulging of flat land and

the ground level adjacent to the water body was raised by more than a meter in height. In addition, several cracks developed resulting in damage of the newly constructed surface drain for the conveyance of leachate. A committee, constituted by KMC, recommended action for damage control but did not recommend any measures for creating outlet for methane and carbon dioxide produced when anaerobic digestion takes place. The emission of methane from municipal solid waste dumped in Dhapa was 63.23 thousand tonnes per year and that of carbon dioxide was 13.28 lakh tonnes. Records also revealed that the soil underlying the site consisted of very soft silts and clay. This condition, combined with elevated pore pressure (due to presence of water body) may result in stress conditions leading to failure of the slope and causing untoward incidents. Despite this, KMC had not yet initiated any action to process municipal solid waste or at least stop dumping municipal solid waste at Dhapa.

Tamil Nadu

- Chennai Corporation had no scientific landfill and the waste was being dumped in two open dumpsites at Perungudi and Kodungaiyur. The dumpsite at Perungudi is at the Pallikaranai swamp area, which also houses a large number of species of plants and animals. Dumping had been taking place in this area for more than 15 years and almost 25 *per cent* of the marshland has been lost due to indiscriminate dumping. A study by the PCB in 2005 showed that the marsh water was not fit to support fish/wild life and drinking/bathing.

Dumpsite in Chennai, Tamil Nadu

MoEF replied in August 2008 that Schedules I and II of the municipal solid waste rules provided time limits for implementation of various activities and compliance criteria and for collection, segregation, storage, transportation, processing and disposal of municipal solid waste. According to MoEF, even though the system was expected to be in place by December 2002, due to various constraints, very few states had complied hundred per cent in this regard. MoEF also stated that it was the responsibility of the local bodies to identify the best suited waste processing technologies for the area under their jurisdiction. MoEF also stated that the recommendations in this regard in the draft audit report have been noted for initiating appropriate actions and these would be communicated to the PCBs.

Recommendations

- *The rules should specify action to be taken by the states, and not just municipalities for improving the management of municipal solid waste in the state.*
- *Authorisations for setting up waste processing and waste disposal facilities should be made mandatory for each municipality.*
- *States and municipalities should make greater efforts to collect, regularly and completely, the municipal solid waste generated. Waste generated by activities like dairies, slaughter houses, restaurants etc., should also be collected and each municipality should aim for collection of 100 per cent of the municipal solid waste generated.*
- *Segregation should be given greater emphasis by means of publicity and awareness campaigns and holding regular meetings with housing associations and NGOs. State governments could make waste segregation mandatory and the municipality could be authorised to levy fines if segregated waste is not made available to the municipality for collection.*
- *Waste processing should be made mandatory in each municipality. CPCB could help each municipality in identifying the waste processing technology best suited to the needs of the municipality. Sufficient funding should be provided by MoEF/MoUD to set up waste processing infrastructure in each municipality.*
- *All municipalities should take steps to improve the existing dumpsites to make them more sanitary and aesthetic. Dumpsites in residential areas and near water sources/water bodies should be closed down and periodic monitoring of dumpsites for contamination of environment should take place.*
- *Identification of land for setting up landfills should be done on a priority basis and landfills should be developed by each municipality according to a time bound programme. Landfilling should be restricted to non-biodegradable/inorganic waste.*

6.2.2 Compliance to Bio-Medical Waste (Management and Handling) Rules, 1998

The bio-medical waste rules specify in Rule 4, that it shall be the duty of every occupier of an institution generating bio-medical waste which includes a hospital, nursing home, clinic, dispensary, etc., to take all necessary steps to ensure that such waste is handled without any adverse effect to human health and the environment and according to Rule 5, bio-medical waste shall be treated and disposed of in accordance with Schedule I, and in compliance with the standards prescribed in Schedule V of the rules. Further, every occupier, where required, shall set up in accordance with the time-schedule in Schedule VI, requisite bio-medical waste treatment facilities like incinerator, autoclave, microwave system for the treatment of waste, or, ensure requisite treatment of waste at a common waste treatment facility or any other waste treatment facility. In addition, according to Rule 7, the government of every State shall establish a prescribed authority with such members as may be specified for granting authorisation and implementing these rules. In all the states, the state PCBs were the prescribed authority.

(a) Establishment of prescribed authorities

According to Rule 7 of the bio-medical waste rules, the state governments had to establish a prescribed authority for granting authorisation and implementing the bio-medical waste management and handling rules within one month of bio-medical waste rules coming into force. It was noticed that out of 15 sampled states:

- ***Delhi, Maharashtra, Tamil Nadu*** and ***West Bengal*** established the prescribed authority, that is, PCBs of the states as defined in the Rules, by 2002. ***Orissa*** established prescribed authority in June 1999. ***Assam*** established prescribed authority in 2005 after the due date.
- Audit could not verify if the prescribed authority had been set up within the time limit in ***Gujarat***, ***Punjab***, ***Rajasthan***, ***Uttar Pradesh***, ***J&K***, ***Haryana***, ***Andhra Pradesh***, ***Tripura*** and ***Tamil Nadu***.

According to Rule 9 of the bio-medical waste rules, state governments had to constitute an advisory committee to advise the government of the state and the prescribed authority on matters related to the implementation of these rules. As already discussed in Chapter 5, paragraph 5.2.2(b), out of the 15 sampled states, only 60 *per cent* of the sampled states had set up the advisory committees.

Thus, the bodies mandated by the bio-medical waste rules were not constituted in most of the states, thereby impacting on the effectiveness of implementation of the bio-medical waste rules.

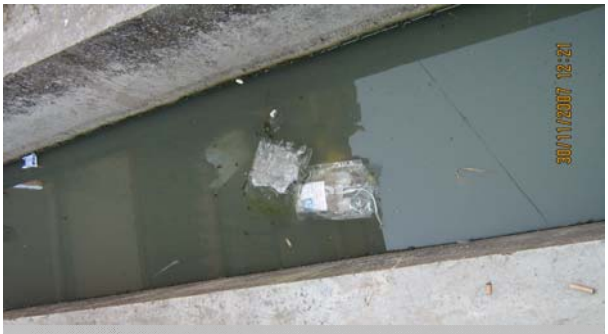
(b) Authorisation

According to Rule 8 of the bio-medical waste rules, every institution generating, collecting, receiving, storing, transporting, treating, disposing and/or handling bio-medical waste and every operator of a bio-medical waste treatment facility, had to seek authorisation from the prescribed authority of the state for handling and disposal of bio-medical waste. Hence, biomedical waste handling and disposal facilities could be set up by a hospital/ health institutions/ private operators only after receipt of authorisation by the prescribed authority. Out of the 180 hospitals sampled in audit, it was noticed that:

- Only in 29 *per cent* of the sampled hospitals, waste disposal facilities were set up after getting authorisation from prescribed authority.
- In 31 *per cent* of the sampled hospitals, waste disposal facilities were set up before getting authorisation from prescribed authority.
- In 40 *per cent* of the sampled hospitals, it could not be verified whether waste disposal facilities were set up subsequent to authorisation.

Authorisations by prescribed authority specify the compliance criteria and are subject to verification by PCB. Hospitals/ private operators running waste disposal facilities without authorisation would mean that the compliance criteria would not be adhered to, which might result in hazards to public health as well as contamination of the environment.

(c) Segregation



Used blood transfusion kits thrown in drains (West Bengal)

According to Rule 6, biomedical waste was not to be mixed with other waste and had to be segregated into containers/bags at the point of generation in accordance with Schedule II prior to its storage, transportation, treatment and disposal by the hospitals/operators. It was noticed in audit that out of 180 sampled hospitals:

- In 34 *per cent* of the sampled hospitals, bio-medical waste, like effluents, needle sharps etc., were mixed with other wastes.
- In 33 *per cent* of the sampled hospitals, bio-medical waste was not mixed with other waste.
- In 33 *per cent* of the sampled hospitals, it could not be verified whether bio-medical waste was mixed with other kinds of waste.

Segregation of waste into 10 categories according to type and putting them into different coloured bags was specified in the Schedule 1 of the bio-medical waste rules. This had to be undertaken by the hospitals/operators being the generators of the waste for its safe handling under the rules. The activities envisaged under segregation and the performance of the 180 sampled hospitals with reference to these activities of segregation are depicted in the table below:

Activities for segregation of bio-medical waste to be undertaken by the hospital/operator	Done	Not done	Not verifiable	Total
1. Human Anatomical Waste segregated as Category I waste and put in Yellow plastic bag.	92	58	30	180
2. Animal Waste segregated as Category 2 and put into yellow plastic bag.	No veterinary hospital in sample			
3. Microbiology & Biotechnology Waste segregated as Category 3 and put into red disinfected container/ plastic bag.	53	49	78	180
4. Waste sharps segregated into category 4 and put into Blue/White translucent Plastic bag/puncture proof container.	53	55	72	180
5. Discarded medicines and cytotoxic drugs segregated as Category 5 and put into black plastic bag.	39	50	91	180
6. Solid waste segregated into Category 6 and put into red disinfected container/ plastic bag.	70	41	69	180
7. Solid waste segregated into Category 7 and put into Blue/White translucent Plastic bag/puncture proof container.	41	55	84	180
8. Liquid Waste segregated as Category 8.	39	57	84	180
9. Incineration Ash segregated as Category 9 and put into black plastic bag.	Most hospitals don't have incinerators or incinerators are not in working condition and in Madhya Pradesh, incinerator ash is mixed with municipal solid waste.			
10. Chemical waste segregated as Category 10 and put into black plastic bag.	31	41	108	180

Activities for segregation of bio-medical waste to be undertaken by the hospital/operator	Done	Not done	Not verifiable	Total
Total	**418**	**406**	**616**	**1440**
Per cent	***29***	***28***	***43***	

It could be seen that segregation as envisaged in the bio-medical waste rules was taking place in only 29 *per cent* of the sampled hospitals while it was not taking place in 28 *per cent* of the sampled hospitals. Segregation needs to be enforced in all the hospitals so that bio-medical waste does not go untreated, causing health hazards.

(d) Labeling, storage and transportation

According to Rule 6 of bio-medical waste rules, if a container is transported from the premises where bio-medical waste is generated to any waste treatment facility outside the premises, the container should carry the label prescribed in Schedule III and untreated biomedical waste should be transported only in such vehicle as may be authorised for the purpose by the competent authority as specified by the government. Further, no untreated bio-medical waste shall be kept stored beyond a period of 48 hours and if, for any reason, it becomes necessary to store the waste beyond such period, the authorised person must take permission of the prescribed authority and take measures to ensure that the waste does not adversely affect human health and the environment.

With respect to labeling, audit check of a sample of 180 hospitals revealed that:

- Labeling took place only in 19 *per cent* of sampled hospitals. It did not take place in 34 *per cent* of sampled hospitals while it was not verifiable in 47 *per cent* of sampled hospitals.
- In ***Tripura***, labeling did not take place in all the sampled hospitals while in ***West Bengal, J&K*** and ***Madhya Pradesh***, only one, three and two sampled hospitals respectively labeled the bio-medical waste.

With respect to storage of waste, audit check of 180 sampled hospitals revealed the following:

- 30 *per cent* of sampled hospitals did not keep untreated waste beyond 48 hours. However, 17 *per cent* of sampled hospitals kept untreated waste beyond 48 hours.
- In 53 *per cent* of sampled hospitals, it could not be verified whether waste was being stored beyond 48 hours.

With respect to transportation, it was observed that:

- In ***West Bengal***, no proper transportation existed in eight out of the 12 sampled hospitals. In ***Tripura*** and ***J&K***, transport facility was not available with government hospitals. In ***Orissa,*** out of 12 sampled hospitals, six hospitals did not have authorised vehicles and were dumping the bio-medical waste either in deep burial pits or in open sites inside the hospital premises. In

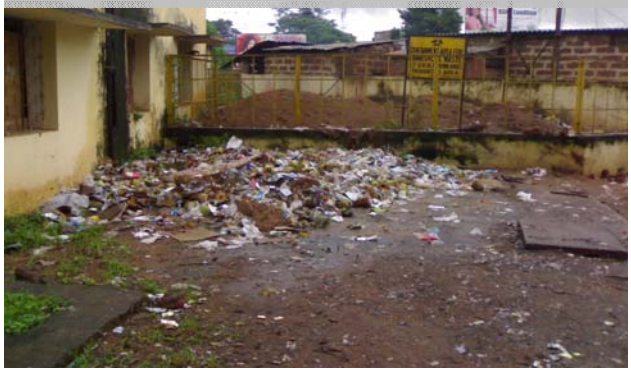
Tamil Nadu, 11 out of 12 sampled hospitals did not have authorised vehicles for transportation.

The hospitals need to take appropriate action for labeling, storage and transportation so that bio-medical waste does not pose any risks to human health or lead to contamination of the environment.

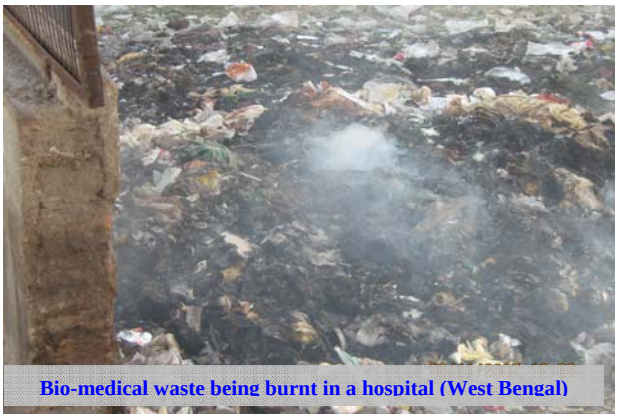
(e) Treatment and disposal

According to Rule 5(2) of the bio-medical waste rules, every occupier, where required, shall set up in accordance with the time-schedule in Schedule VI, requisite bio-medical waste treatment facilities like incinerator, autoclave, microwave system for the treatment of waste, or, ensure requisite treatment of waste at a common waste treatment facility or any other waste treatment facility. According to the Schedule VI in the rules, the due dates were between December 1999 to 2002, for different categories of hospitals.

Bio-medical waste dumped outside containment area (Orissa)



Despite the due dates ending, at the latest by December 2002, it was noticed that waste treatment/disposal infrastructure had not been set up in the sampled hospitals. Sampled hospitals in states like ***Tripura***, ***West Bengal***, ***Tamil Nadu, J&K***, ***Punjab***, ***Gujarat***, ***Assam*** and ***Maharashtra*** had less than one processing/disposal facility. Thus, even though the due dates for setting up bio-medical waste processing/disposal infrastructure was long past, more than 50 *per cent* of the hospitals sampled had inadequate waste processing/disposal infrastructure.



Bio-medical waste being burnt in a hospital (West Bengal)

Test check of 180 hospitals to assess whether bio-medical waste was being treated and disposed off by the hospital or the operator in accordance with the rules and in compliance with standards prescribed in the rules revealed that:

- Only 17 *per cent* of sampled hospitals were treating/disposing bio-medical waste as per the compliance criteria in the rules.
- 43 *per cent* of sampled hospitals were not treating/disposing the bio-medical waste in accordance with the criteria in the rules.

- In 40 *per cent* of sampled hospitals, records were not made available to verify whether bio-medical waste was being treated/disposed off in accordance with the rules.

Thus, bio-medical waste rules were being violated, which may have serious consequences for public health as well as environment.

(f) Specific cases of violation in states

Some individual cases of violation of bio-medical waste rules noticed in the states are as under:

Orissa

- Four district headquarters hospitals in Bhubaneshwar, Dhenkanal, Sambalpur and Jagatsinghpur were not granted authorisation by the PCB for the period 2002-07 to collect, receive, store, transport, process and dispose bio-medical waste on the grounds of inadequate management of bio-medical waste. These hospitals were provided with autoclaves and plastic shredders during February to May 2005 for disinfecting/treating the bio-medical waste generated and to stop reuse of bio-medical waste. However, these equipment were lying unused due to lack of trained/skilled manpower as reported by the hospitals. It was also noticed that in the hospitals in Dhenkanal and Jagatsinghpur, the untreated bio-medical waste was being dumped outside the containment area within the hospital premises, exposed to stray animals and visiting patients/escorts of the patients. In the hospital at Sambalpur, the containment area was seldom used and bio-medical waste was dumped inside the hospital campus by the hospital due to water logging of the deep burial pits of the containment area. In the district hospital at Bhubaneshwar, the containment area was damaged and waste was being dumped in an uncontrolled manner within the hospital premises, according to a report by the PCB.

Autoclave lying unused (Orissa)

Rajasthan

- Scrutiny of reports compiled by PCB revealed that 12784 kg of bio-medical waste was generated daily by 1864 identified health care facilities during 2006, out of which only 9079 kg of waste was treated daily leaving the rest untreated.

- The work for creation of Common Treatment Facilities (CTF) was allotted in February 2005 to be completed within four months. However, it was noticed that only six out of 11 CTFs were completed by April 2007. It was also noticed in audit that bio-medical waste generated by health care facilities in Barmer and Jaisalmer could not be covered under CTF.
- The state advisory committee directed the Secretary, Animal Husbandry Department to identify the veterinary units and slaughter houses generating waste and to cover these units under the rules for handling and disposal of waste. However, this was not yet done, leading to animal wastes generated by these units being disposed off in an unscientific manner.
- According to bio-medical waste rules, used plastic bottles and I.V. sets are to be shredded before being put into bags for final disposal. Further, bio-medical waste cannot be stored beyond a period of 48 hours. Audit noticed that in M.B. Hospital and P.D. Mahila Hospital in Udaipur, used empty plastic bottles and I.V. sets were found stored in the hospital premises and auctioned through open bids. Storage of waste beyond 48 hours and auction was a clear violation of the rules as well as posing hazards to health.

Madhya Pradesh

- It was noticed that four incinerators were being operated in M.Y Hospital, Indore; NSCB Medical College Hospital, Jabalpur; Hamadiya Hospital, Bhopal and District Hospital, Ratlam without authorisation from PCB, in the heart of the city, in residential areas. It was also noticed that waste was being incinerated without attaining the desired temperatures in the primary and secondary chambers; leading to possibility of causing public health hazard as well as risk to the environment.
- Under Section 21(5) of the Air Act, it is obligatory for incinerators to install and operate efficient Air Pollution Control Device (APCD). It was noticed that out of 35 incinerators installed in the state, nine incinerators were running without APCD and no action was taken by the PCB against the operators.
- Most of the Common Bio-medical Waste Treatment Facilities (CBWTF) did not have autoclaves, microwaves, hydroclaves and shredders for treatment and mutilation of category wise waste. There were no effluent treatment plants to treat waste before discharge. CBWTF operators in Indore, Ratlam, Bhopal and Jabalpur district mixed the incineration ash with other wastes and dumped it in municipal solid waste sites.
- It was found that authorisation for collection, reception, storage, transportation, treatment and disposal of bio-medical waste generated in Ratlam Christian College was renewed for the period 1999-2007, without PCB ascertaining whether the hospital had the facility for the safe disposal of bio-medical waste.

West Bengal

- It was noticed in Durgapur S.D.Hospital that bio-medical waste was segregated and kept in different colored bags and dumped daily by the scavenging contractor into a locked vat lying in the hospital premises. This untreated waste is cleared only once a week by the municipal authority and dumped into an open dumping ground without treatment. During inspection of the vat by the audit team, it was found unlocked and not in regular use. Waste was being dumped in front of the vat and cleared from there. The audit team noticed presence of one rag picker, who was collecting reusable articles. In Asansol SD hospital, the existing deep burial pit was filled up and untreated waste was lying unattended in the hospital premises, which was ultimately disposed once a week by the municipal authority.

MoEF stated in August 2008 that vide amendment to the bio-medical waste rules in 2003, PCBs had been notified as the prescribed authority in the respective states and, thus, all states had PCBs as the prescribed authorities. MoEF also stated that it had no comments to offer on the issue of compliance of the states to bio-medical waste rules.

Good Practices in India

- In ***Gujarat***, the Gujarat Pollution Control Board (GPCB) was the prescribed authority for bio-medical Waste (Management and Handling) Rules. GPCB conducted a survey and prepared an inventory of biomedical waste generating units, and, based on the inventory; it authorized 12 CBWTFs at different places in the state on the criteria of 10000 beds or 150 km radius. An MoU bound the facilities to finally treat and dispose biomedical waste collected by it. This ensured the treatment of bio-medical waste within 48 hours of its generation. Trainings and seminars were also organised by GPCB with the help of Medical Council of Gujarat State and other NGOs to train and propagate awareness in the generators of biomedical waste.
- In ***Gujarat***, the government decided to upgrade the standards of eight Civil Hospitals, one teaching hospital and six laboratories of all Government Teaching Hospitals as per standards. To enforce this, it entered into service agreement with Quality Council of India, New Delhi. The standards included standards of Hospital Infection Control and compliance with regard to provisions of Biomedical Waste (Management and Handing) Rules, 1998. This established a benchmark for bio-medical waste generating units in the State.

Recommendations

- *Advisory bodies should be set up in each state and it should be consulted regularly on matters relating to implementation of the bio-medical waste rules.*
- *Registrations of those hospitals that do not set up treatment/disposal facility or join a common facility could be cancelled. New hospitals should not be allowed to commence*

operation without making sure that it has a facility for treatment/disposal of bio-medical waste.

- *Segregation of bio-medical waste according to its type should be ensured in each hospital. Measures should be taken to achieve 100 per cent segregation by each hospital.*
- *Based on the kind of waste being generated in the hospitals, waste treatment/disposal infrastructure should be created. Advisory bodies and CPCB can be consulted in this regard. Hospitals could join a common facility for treatment/disposal and PCBs should ensure that each common facility has the requisite and complete infrastructure to handle waste safely.*

6.2.3 Compliance to the Recycled Plastics Manufacture and Usage Rules, 1999 and Recycled Plastics Manufacture and Usage (Amendment) Rules, 2003

According to Rule 3, the prescribed authority for enforcement of the provisions of the rules related to manufacture and recycling shall be the State PCBs and the prescribed authority for enforcement of the provisions of these rules related to the use, collection, segregation, transportation and disposal shall be the District Collector/Deputy Commissioner of the concerned district. Further, according to Rule 4, no vendor shall use carry bags and containers made of recycled plastic for storing, carrying, dispensing or packaging of foodstuffs. Rule 6 stipulates that recycling of plastics shall be undertaken strictly in accordance with the Bureau of Indian Standards specification and Rule 8 states that no person shall manufacture carry bags or containers irrespective of its size or weight unless the manufacturer has registered the unit with the PCB.

Plastic waste mixed with other waste in Uttarakhand

(a) Implementation

(i) According to Rule 3, prescribed authority/DC/DM of districts had to take steps for enforcement of rules relating to use, collection, segregation, transportation and disposal of plastics. Out of the 20 sampled states, it was noticed that:

- In ***Sikkim***, the use of plastics was banned.
- Steps by DCs/DMs for the enforcement of rules was taken only in ***Orissa*** (in 2 out of 3 sampled districts), ***Karnataka*** (in 2 out of 3 sampled districts), ***Uttar Pradesh*** (1 district), ***Punjab*** (in 1 out of 3 sampled districts) and ***Uttarakhand*** (in 1 out of 3 sampled districts)
- No steps were taken for enforcement of the rules in ***West Bengal*** and ***Himachal Pradesh.*** In ***Himachal Pradesh*** though the government had prohibited plastic bags, plastic was still getting mixed and disposed with solid waste.

- Steps taken by the DMs/DCs for the enforcement of the rules were not verifiable in ***Assam, Delhi, Gujarat, Maharashtra, Rajasthan, Chhattisgarh, Jharkhand, Kerala, Bihar, Andhra Pradesh, Tamil Nadu*** and ***Meghalaya***.

Plastic waste mixed with other waste in Uttarakhand

Since it is not specified what kind of action is required to be taken by DMs/DCs for the enforcement of the rules, as such, action taken by them was difficult to verify in audit. In most of the cases, orders/ circulars were issued for the enforcement of these rules and no follow-up was done to check the implementation of these orders/ circulars.

(ii) According to Rule 4, no vendors should use carry bags or containers made of recycled plastics for storing, carrying, dispensing or packaging of foodstuffs. Out of the 20 sampled states, it was noticed that:

- Vendors were using carry bags or containers made of recycled plastic for storing, carrying, dispensing or packaging of foodstuffs only in ***Assam*** (1 out of 3 sampled districts), ***Orissa*** (1 out of 3 sampled districts), ***Himachal Pradesh*** (1 out of 3 sampled districts) and ***Karnataka*** (1 out of 3 sampled districts).
- Vendors were not using carry bags or containers made of recycled plastic for storing, carrying, dispensing or packaging of foodstuffs in ***Bihar, Kerala*** and ***Sikkim***.
- It was not verifiable in audit whether in ***Gujarat, Maharashtra, Punjab, Rajasthan, Chhattisgarh, Jharkhand, Meghalaya, Andhra Pradesh, Delhi, West Bengal, Tamil Nadu, Uttar Pradesh*** and ***Uttarakhand*** vendors were using carry bags or containers made of recycled plastic for storing, carrying, dispensing or packaging of foodstuffs.

(iii) According to Rule 6, recycling of plastic waste had to be undertaken strictly in accordance with the Bureau of Indian Standards specification. Audit of 20 sampled states revealed that:

- Recycling of plastic waste strictly in accordance with the Bureau of Indian Standards specification was being done only in the sampled municipalities in ***Himachal Pradesh*** and in one district each (out of 3 sampled) in ***Karnataka*** and ***Tamil Nadu***.
- It was not being done in ***Orissa, West Bengal, Bihar*** and ***Sikkim***.

- It could not be verified in audit in ***Assam***, ***Delhi***, ***Gujarat***, ***Maharashtra***, ***Punjab***, ***Rajasthan***, ***Chhattisgarh***, ***Andhra Pradesh***, ***Jharkhand***, ***Kerala***, ***Meghalaya***, ***Uttarakhand*** and ***Uttar Pradesh*** whether recycling was being done according to specifications of Bureau of Indian Standards.

(iv) According to Rule 8, no person shall manufacture carry bags or containers irrespective of its size or weight unless the persons/manufacturer had registered the unit with the PCB. Out of the 20 sampled states, it was noticed that:

- Only in ***Himachal Pradesh***, from February 2006 onwards units manufacturing carry bags/ containers had registered themselves with the PCB. In ***Chhattisgarh***, in the sampled municipality one unit was registered with the PCB. In ***Rajasthan***, out of two units in Jodhpur, one unit had applied for registration. In ***West Bengal***, the PCB had not prepared full list of manufacturers and had granted registration to all the 25 units that applied for registration. In ***Karnataka***, 181 units out of 269 units applied for registration.
- In ***Rajasthan***, ***Tamil Nadu*** and ***Sikkim***, units manufacturing carry bags/containers from virgin plastic or recycled plastic or both had not applied for registration with PCBs.
- It could not be verified in audit in ***Assam***, ***Delhi***, ***Gujarat***, ***Maharashtra***, ***Punjab***, ***Andhra Pradesh***, ***Jharkhand***, ***Kerala***, ***Meghalaya***, ***Uttarakhand,*** ***Orissa, Bihar*** and ***Uttar Pradesh*** whether units manufacturing plastic had registered themselves with the PCBs.

(b) Specific cases of violation in states

An instance of these rules being violated in the states is as follows:

- In ***Chhattisgarh***, rules pertaining to plastic waste were to be implemented by the District Magistrate/District Collector. A surprise inspection in Rajnandgaon, conducted in September 2007, at the instance of Regional Office, Environment Control Board, Bhilai disclosed that three industrial production units were manufacturing polythene bags of less than 20 micron thickness. This matter was reported to the District Collector but action taken has not been intimated to the Environment Control Board.

MoEF stated in August 2008 that CPCB was coordinating with PCBs in implementation of plastic waste rules. Out of 34 States/UTs, 23 States/UTs had completed inventory of plastic manufacturing and recycling units. Further, there were 2793 industries, of which, 1134 had been granted registration by respective PCBs. It also stated that eight states had brought out separate notification in respect of increase of thickness of plastic bags.

The reply has to be viewed in light of the fact that implementation of the plastic waste rules in the states is poor as shown by audit, which need to be more effectively addressed by MoEF.

Recommendations

- *The plastic waste rules should clearly specify actions to be taken by the DCs/DMs for enforcement of the rules relating to use, collection, segregation, transportation and disposal of plastics.*
- *Surprise checks should be conducted to verify whether vendors were following the provisions of the rules.*
- *Database of manufacturers of plastic carry bags/containers should be built to ensure that all manufacturers seek authorisation of PCB before they take up manufacture of such items.*

Conclusion

Compliance to Municipal Solid Waste rules*: Collection of waste by the municipalities was not taking place regularly and effectively. There was negligible segregation of waste and performance of the sampled municipalities in ensuring proper storage of collected waste was very poor. In addition, daily clearing of storage bins was not taking place, leading to accumulation of waste and creation of unhygienic conditions. Transportation was taking place mostly in uncovered trucks, which would lead to scattering of collected and stored waste. Waste processing facilities were almost non-existent and the burden on landfilling, as envisaged in the municipal solid waste rules, was not minimised. Landfills had not been established and open dumping was the most common option for the disposal of waste. No monitoring of dumpsites was taking place and municipalities did not plan for closing of dumpsites and identifying areas for landfills, which would facilitate scientific disposal of waste. This is a matter of grave concern as no waste processing facilities were being developed. Thus, in the absence of waste processing and scientific landfilling, the open dumping of waste would continue; not only causing contamination of the environment but also public health hazard due to unsanitary conditions. Thus, overall compliance to the municipal solid waste rules in the states was poor.*

Compliance to bio-medical waste rules: *The bodies mandated by the bio-medical waste rules were not set up in most of the states, affecting the implementation of the bio-medical waste rules. Hospitals/ private operators were running waste disposal facilities without authorisation and segregation of bio-medical waste according to categories was not taking place completely. This resulted in various categories of bio-medical waste not being treated according to the methods specified in the rules. The waste treatment/disposal infrastructure created in the states was insufficient. Thus, compliance to bio-medical waste rules was weak, which would not only affect public health but also lead to contamination of environment.*

Compliance to plastic waste rules: *Compliance to plastic waste rules was weak. Action was not being taken by DCs/DMs for the enforcement of the rules and it was difficult to verify whether vendors were using carry bags or containers made of recycled plastic for*

storing, carrying, dispensing or packaging of foodstuffs. It was difficult to verify in audit whether recycling was being done according to specifications of Bureau of Indian Standards. None of the sampled states had complete database on the number of manufacturers of plastic carry bags/containers; thus, it was difficult to verify whether all manufactures had sought authorisation from PCBs for manufacturers of plastic carry bags/containers.