

Chapter IV

Audit reports on Air Pollution

Audit of pollution control by the Transport Department, Mizoram

Failure of the Department to arrange apparatus for smoke emission test led to plying of vehicles without pollution under control certificates and also loss of revenue of Rs.2.99 crore.

Government of Mizoram in June 1999 notified that every motor vehicle shall comply with the standard of vehicle smoke emission as prescribed by Central Government as laid down under rule 115 and 116 of the Central Motor Vehicles Taxation Rules, 1989. Accordingly, all vehicle owners were required to produce their vehicles for test in the offices of respective DTO and obtain pollution under control certificate valid for six months on payment of fee of Rs.150 per vehicle with effect from 28 May 2002.

Test check of records of the Directorate of Transport, Mizoram in March 2006 revealed that despite issue of notification, not a single test could be conducted during the year 2004-05 and 2005-06 by the Departmental officers for want of apparatus. Thus, failure on the part of Government to arrange apparatus for emission test not only resulted in plying of 49,826 vehicles without 'pollution under control certificate' during the years 2004-05 and 2005-06, but also led to loss of revenue of Rs.2.99 crore. Besides, there is also an attendant risk of environment pollution.

After this was pointed out, the Department while accepting the facts in June 2006, attributed the loss to non availability of apparatus and stated that steps are being taken to acquire the same.

The case was reported to Government in April 2006; their reply had not been received (November 2006).

Performance audit of pollution control in Thermal Power Stations of Bihar State Electricity, Bihar

Ineffective pollution control in Thermal Power Stations of Bihar State Electricity Board

Introduction

Thermal Power Plants (TPPs) have been identified as one of the major polluting industries. Air is polluted by Suspended Particulate Matter (SPM), and emission of SO₂ and NO_x gases, land is polluted by coal slurry and water is polluted by slurry flowing into the rivers. Bihar State Electricity Board (BSEB) owns two TPPs; Barauni Thermal Power Station (BTPS) and Muzaffarpur Thermal Power Station (MTPS) situated at Barauni and Kanti respectively. Of the seven units at BTPS only two are functional. MTPS comprises two units both of which have been shutdown since October 2003.

Pollution Control Measures in TPPs

The TPPs are required to control pollution by installing Electro Static Precipitators (ESP), reduction of particulate matter emission upto 100mg/m, installation of opacity meters/continuous monitoring system with proper calibration, reviewing stack height requirement, use of beneficiated coal as per GoI notification (March 2003), entering into a 'fuel supply agreement' with coal companies to meet requirement of coal as per Central Electricity Authority's (CEA) matrix, setting up their own coal washeries and selecting private entrepreneurs to set up coal washeries near pitheads, installation of coal beneficiation plants, adoption of dry fly ash extraction/dry disposal system, or medium (35 - 40 per cent) ash concentration slurry disposal system, or lean phase with 100 *per cent* ash water recirculation system, depending upon the site specific environment, and construction of two separate ash ponds at TPP.

In order to protect the environment, conserve top soil and prevent dumping of fly ash discharge from coal based TPPs, GoI notified (September 1999) that TPPs should provide dry ash/fly ash to users outside the premises or allow uninterrupted access to such users. The fly ash was to be used in brick kilns, construction of roads and dams, cement manufactories and landfills.

Achievements of the Board in controlling pollution

ESPs were installed at Units 6 and 7 of BTPS and 1 and 2 of MTPS at the time of their commissioning. Stack Emission Monitoring Tests and Ambient Air Quality Tests were being conducted by a (GoI recognized) private agency in MTPS till its closure in October 2003.

In BTPS, the stack emission monitoring was done departmentally upto January 2002 and discontinued thereafter for which there were no recorded reasons. BTPS did not have any report on Ambient Air Quality.

Opacity meter/continuous monitoring system with proper calibration do not exist in BTPS or MTPS.

The pollution levels on different parameters for BTPS (latest report of January 2002) and MTPS (latest report of August 2003) are summarised in the table below.

Test	Pollutant	CPCB Norms	Actuals	
			MTPS	BTPS
SEM*	SPM	150mg/m ³	324.6mg/m ³	310mg/m ³
	SO ₂	NS	125.7mg/m ³	102mg/m ³

Stack Emission Monitoring. SPM norms as per Gazette of India, General Emission Standards, published by Ministry of Environment & Forests, 19 May 93

AAQ	NO _x	NS	47.3mg/m ³	87mg/m ³
	SPM	500µg/m ³	315µg/m ³	

SO ₂	120µg/m ³	29.8µg/m ³	NA
NO _x	120µg/m ³	19.9µg/m ³	

NS – Not specified NA – Not available

Non-completion of chimney work at MTPS

A Public Interest Litigation on the pollution of Ganga was filed in the Hon'ble Supreme Court, which directed BSPCB to inspect industries including TPPs polluting Ganga directly or indirectly. The BSPCB inspected MTPS and found that air pollution was above the permissible limit. Based on this report, the Supreme Court directed MTPS to either increase the height of the existing chimney from 125 to 220 metres or construct a new 220 metre high chimney as per the norms and the rules notified by GoI. Accordingly, work order for design and construction of a new 220 metre high RCC chimney was awarded to Gammon India Ltd., Mumbai (Contractor) for a cost price of Rs 8.99 crore in April 1995.

Meanwhile, CPCB in January 1996 concluded that TPPs sanctioned by CEA prior to 1 July 1984 might not be required to increase the height of existing chimneys as per regulations notified by GoI in August 1990. In view of this, BSEB filed an affidavit in the Supreme Court praying for exemption from increasing the chimney height to 220 metres and *suo moto* stopped the work. The matter is subjudice and the work is incomplete. Neither was the work order cancelled nor was mobilisation advance recovered. The Contractor, however, demanded Rs 93.00 lakh (upto November 1997) at the rate of Rs 3.00 lakh per month as compensation for idle establishment, which has neither been accepted nor rejected by BSEB.

The SPM concentration in stack emission was more than double the CPCB norm which could have been reduced by raising the stack height. Thus, stoppage of the work of construction of the new chimney of the required height is not justified as the existing height is ineffective in controlling pollution.

Quality of coal

Coal linkage to TPPs of BSEB is provided by CEA. There are no proposals to either set up own coal washeries or to select private entrepreneurs to set up coal washeries and install coal beneficiation plants.

Further, the boilers of the TPPs in BSEB have been designed to consume slack coal of Grade D but the coal received at these TPPs was of inferior grading i.e. E, F and G (ungraded). Consequently, coal consumption and pollution are high vis-a-vis the norms. As 'fuel supply agreements' were not made with the coal companies supply of quality coal could not be ensured.

Construction of ash ponds

Dry fly ash extraction/dry disposal system does not exist in either BTPS or MTPS. Presently, the fly ash/bottom ash generated is sent to ash ponds as slurry which dries after

settlement. Ash users lift dry ash from ash ponds. This is the system prevalent in both BTPS & MTPS. BTPS has two ash ponds of 143 acres and 102 ac es and MTPS has only one ash pond of 290 acres. A second ash pond is to be constructed in MTPS. The system of ash disposal envisaged in GoI's notification has not been adopted either by BTPS or MTPS.

Disposal of coal ash

BTPS and MTPS published notices in the local press allowing free lifting of coal ash to brick kilns, cement manufactories to construct roads and dams and fill low lying areas.

The ash disposal in BTPS during 2003-04 was only 14.69 thousand ton and ash remaining in the ash ponds was 3 million tons. Ash disposal in MTPS upto 2001-02 was 4.36 lakh ton and balance lying in the ash pond till March 2004 was approximately 1 million ton. Thus disposal of ash at both plants has not been satisfactory leading to a large pileup of ash.

Conclusion

The infrastructure in BTPS and MTPS for controlling pollution is inadequate. Facilities to test SPM and flue gases emission are inadequate and hence emission checks are not of the desired frequency. The height of the chimney at MTPS is less than that required to effectively control pollution due to which the stack emission of SPM was more than double the CPCB norm. Ash disposal too was ineffective at both BTPS and MTPS and ash disposed off is negligible compared to the quantity generated. The fuel supply agreements were not made with coal companies for supply of beneficiated coal as a result supply of quality coal could not be ensured. The matter was reported to the Board/Government (June 2005); their replies had not been received.

Implementation of Acts and Rules relating to air pollution in Andhra Pradesh

Highlights

Environmental pollution due to air pollution and hazardous waste was not controlled in the State as the provisions of Air (Prevention and Control of Pollution) Act were not enforced effectively. The concentration of air pollutants increased steeply during 1996-2000 in residential, commercial and other sensitive areas (schools, hospitals, etc.) in the twin cities of Hyderabad and Secunderabad, and Visakhapatnam mainly due to increase in the number of vehicles. Naso respiratory symptoms, chronic bronchitis and bronchial asthma increased in Hyderabad due to high air pollution. Ambient air quality levels was not monitored. The ambient noise levels in all the test-checked cities are significantly high. The State Board did not effectively enforce the provisions of the Act for abatement of air pollution due to vehicular and industrial emissions. Implementation of the Union legislation on hazardous waste management is still in its infancy. In Hyderabad, RangaReddy and Medak districts, hazardous waste were dumped in vacant lands along roadsides causing contamination of soil, ground water and surface water and atmospheric emissions. The implementation of Hyderabad Waste Management Project at Dindigal was badly delayed. State Board was not aware how the bio-medical waste generated by large number of private health institutions were disposed of. None of the urban local bodies in the State implemented the Municipal Solid Waste (Management and Handling) Rules, 2000. The State Board did not conduct survey to assess the adverse affects on health and environment due to exposure to untreated hazardous waste. Co- ordination lacked among the various departments responsible for abatement of air pollution. Monitoring of polluting industries, etc. by the State Board was very poor. Failure to fix norms/targets for inspections of industries till 1998-99 and heavy shortfalls in the inspections thereafter indicated that the machinery of the Pollution Control Board was virtually non-functional in these areas.

AP Pollution Control Board could utilise only 45 per cent of the total receipts during 1996-2001. Despite having large unspent funds, the State Board did not effectively enforce the provision of the Act for abatement of pollution. [Paragraph 7.5.4]

The concentration of air pollutant viz. suspended particulate matter (SPM) had increased steeply over the 5-year period 1996-2000 in the twin cities of Hyderabad and Secunderabad. [Paragraph 7.5.5A(ii)]

The residential and sensitive areas (hospitals, schools, etc.) of Visakhapatnam also recorded very high concentration of SPM and Respirable SPM, going even up to 300.9 g/cu m and 112.5 g/cu m against the standards of 70 and 50 g/cu m respectively. [Paragraph 7.5.5A(iii)]

In Hyderabad and Secunderabad, 4.25 lakh vehicles plying on the roads were either not subjected to emission tests or were not fit for issue of 'pollution under check (PUC)' certificates. The air pollution due to emission of pollutants from such vehicles remains unabated. Air pollution load had increased from 491 tonnes per day in 1995 to 1123 tonnes in 2000. [Paragraphs 7.5.5 B and

7.5.5B(i)]

The ambient air noise levels in twin cities of Hyderabad and Secunderabad, and Vijayawada and Visakhapatnam, had gone up to as high as 102 decibels (dbs), 116 dbs and 92 dbs respectively against the prescribed standard of only 65 dbs; the State Board failed to take steps to arrest the noise levels. [Paragraph 7.5.5E]

Prevalence of respiratory morbidity attributable to vehicular air pollution, naso respiratory symptoms, chronic bronchitis and bronchial asthma was reported in commercial areas of Hyderabad and Secunderabad. [Paragraph 7.5.7 (a) and (b)]

Co-ordination lacked among the various departments responsible for enforcing the provisions of the Act and Rules for abatement of air pollution. Monitoring by the State Board was very poor. [Paragraph 7.5.11]

7.5.1 Introduction

Due to industrialization and urbanisation, environment get contaminated, threatened, damaged and destroyed, which has a direct impact on the quality of life of all living organisms.

Government of India (GOI) enacted (March 1981), the Air (Prevention and Control of Pollution) Act, 1981, which aimed at prevention and control of air pollution. Subsequently, the Environment (Protection) Act, 1986, was enacted by the Parliament as umbrella Act to cover all the specific and general provisions left by earlier enactments. In March/June 1992, GOI prepared a National Conservation Strategy and Policy Statement on Environment and Development, which provides for specific steps to attain the goals of an environmentally-wise society with the cooperation of State governments, industry, local bodies and the public. Bio-medical Waste (Management and Handling) Rules, 1998, issued by GOI made it mandatory for every occupier of an institution generating, collecting, receiving, storing, transporting, treating, disposing and/or handling bio-medical waste to apply for and obtain authorisation from the State Board. According to Municipal Solid Waste (Management and Handling) Rules 2000, municipal authorities responsible for collection and disposal including landfills of municipal solid waste, were to obtain authorisation for setting up waste processing and disposal facilities.

7.5.2 Organisational set-up

Department of Environment, Forests, Science and Technology (EFS&T) in the State headed by a Principal Secretary is to oversee implementation of the Acts and Rules relating to environmental pollution in the State. AP Pollution Control Board (State Board), was responsible for enforcement of the Environmental Acts and Rules. It consists of a Chairman, a Member Secretary and 7 other members. It has five Zonal Offices (ZOs), 17 Regional Offices (ROs), a Central Laboratory at Hyderabad, five laboratories in ZOs and 7 laboratories in 7 ROs.

7.5.3 Scope of audit

Prevention/control/abatement of air pollution and waste management was reviewed during January - May 2001, by test-check of the records of 1996-2001 of the EFS&T (Environment Wing) Department in Secretariat, State Board and six of its ROs¹, the Central laboratory, four zonal laboratories and two regional laboratories. The results of the review are discussed below.

This review is the second of a series. A review on water pollution was included in the Report of the Comptroller and Auditor General of India for the year ended 31 March 2000.

7.5.4. Finance

The source of income of the State Board are its own receipts, viz. fees, etc. and share of Water Cess received from GOI and assistance from the State Government. Though Rs 15.05 crore was provided in the budgets during 1996-2001, only Rs 9.27 crore were actually released to the State Board by the State Government.

The receipts and expenditure of the State Board during the period 1996-2001 were as follows:
(Rupees in crore)

Year	Share of water cess from GOI	Board's internal revenues	Assistance from State Government		Total receipts	Expenditure	Unspent balance
			Allocation	Releases			
Opening Balance					6.94	-	6.94
1996- 97	2.38	5.97	0.96	0.21	8.56	3.07	5.49
1997- 98	2.12	4.77	4.74	3.68	10.57	4.06	6.51
1998- 99	3.04	6.20	4.43	4.38	13.62	5.20	8.42
1999- 2000	4.73	9.23	2.54	--	13.96	7.00	6.96
2000- 01	3.85	9.62	2.38	1.00	14.47	18.54 \$	(-)4.07
Total	16.12	35.79	15.05	9.27*	68.12 \$	37.87 \$	30.25

This constituted plan (Rs 8.01 crore) and non-plan (Rs 1.26 crore) and includes Rs.7.05 crore received for implementation of Hyderabad Waste Management Project (Rs 4.65 crore) and for upgradation of laboratory facilities under World Bank-aided Pollution Prevention Project-II (Rs 2.40 crore). Besides, technical aid was also made available by Australian Government for construction of treatment, storage and disposal facility (TSDF) at Dindigal village (RangaReddy district) under Hyderabad Waste Management Project. \$ includes Rs 7.49 crore kept in the Personal Deposit (PD) account of the State Board from time to time during the period 1996-2001 and treated as lapsed by the State Government in November 2000. Thus, during 1996-2001 the State Board could utilise 45 per cent of the total available funds. Of the total unspent balance of Rs 30.25 crore, Rs 29.11 crore were invested in term deposits and Rs 1.14 crore in current account.

i) Lapse of project/schemes funds kept in PD account: Out of the unspent balances, Rs 7.49 crore were kept from time to time during 1996-2001 in the PD account (non bearing interest)

of the State Board as per orders of the government (Note below the above table refers). Computed even at 5 per cent per annum, the Board was incurring loss of interest of as much as Rs 37 lakh per annum. The unspent balances of Rs 7.49 crore (including Rs 5.50 crore pertaining to Hyderabad Waste Management Project, etc.) lying in the PD account for over a year as on 31 March 2000 lapsed to Government account in November 2000. Lapse of these funds was attributable to tardy implementation of various projects/schemes by the State Board.

7.5.5 Enforcement and compliance of environmental laws

As per the Environment (Protection) Act, 1986, the State Board is to maintain standards for the quality of air as well as emission of air pollutants into the atmosphere by industrial plants and automobiles as prescribed by the Central Board.

A. Industrial air pollution

i) Industries functioning without statutory consent: To establish any industry causing pollution, prior consent of the State Board is mandatory under the Air (Prevention and Control of pollution) Act, 1981.

However, the Board did not have up-to-date information about polluting industrial units and did not co-ordinate with Industries and Commerce Department to obtain such information. Board also did not have information about new industries established without its clearance.

As of March 2000 there were in all 3100 polluting industrial units located mostly in the 240 industrial estates in the State. Of these, 1900 were categorised 'red' (highly polluting) and 1200 'Orange' (less polluting) based on the level of pollution. The major defaulters are bulk drug, chemical, dyes, distilleries, paper and pulp industries.

In the six test-checked ROs, there were 2189 polluting units of which, 938 were categorised 'red' and 1251 'orange' as of March 2001.

ii) Air pollution in industrial/residential areas of twin cities: Monitoring of air quality by NAAQM 4 stations (set up in 1995) in Hyderabad revealed that the concentration of suspended particulate matter (SPM) in Banjara hills – a residential area, increased from 127 g/cu m in 1996 to 187 g/cu m in 2000 against the standard of 140 g/cu m. Though the concentration of other air pollutants did not exceed the standards, concentration of SPM increased steeply during 1996-2000 in certain areas of Hyderabad as detailed in Appendix XXXVI. The State Board did not however, take effective action to reduce the industrial pollution.

No studies had been conducted by NAAQM or State Board in respect of other residential areas of the twin cities like areas around Charminar till 1999. Government, while admitting that the pollution around Charminar was highest due to severe traffic congestion and vehicular pollution, stated (October 2001) that the Board had set up 20 AAQM stations

throughout Hyderabad and the air quality was being monitored. Government did not however, furnish the results of analysis of air pollutants in these areas.

iii) Air pollution in residential/sensitive areas of Visakhapatnam: Air pollution analysis made by the ZO, Visakhapatnam, during May–December 2000 in residential areas and sensitive areas (hospitals, schools, etc.) revealed that concentration of SPM recorded at St. Alloysis and St. Parish schools (no analysis was available for other sensitive areas) ranged between 58.4 g/cu m and 124.3 g/cu m and 84.0 g/cu m and 300.9 g/cu m respectively against the prescribed standard of 70 g/cu m. Similarly, maximum concentration of RSPM recorded at these locations was 112.5 g/cu m as against the prescribed standard of 50 g/cu m. The concentration of SPM and RSPM at residential areas were 155.8 and 72.5 g/cu m respectively against the standards of only 140 and 60 g/cu m. Neither the State Board, nor the Road Transport Authority (RTA) had taken adequate action for reducing/controlling the air pollution in these areas. No such monitoring was done in other cities by the State Board.

B. Vehicular air pollution

Daily Air pollution load in Hyderabad and Secunderabad increased nearly 3 times. Air pollution from vehicular emissions is a major concern with regard to human health. As of March 2001, 18.02 lakh transport and non-transport vehicles were plying in 4 test-checked cities. Vehicles manufactured more than 15 years ago are considered vintage and more polluting; such vehicles constitute about 20 per cent in each category.

As per the State Board (October 2001) the total pollution load due to all types of vehicles in the twin cities had increased from 491 tonnes per day in 1995 to 1123 tonnes in 2000. Petrol driven vehicles contributed 77 per cent of the total pollution load. As per the government (October 2001) an action plan (Appendix XXXVII refers) on the basis of recommendations of a Committee was being implemented in a phased manner during the period 2001-05.

(a) Vehicles plying without PUC certificates: With a view to curtailing the air pollution due to emissions from ever increasing vehicles, State Government ordered (November 2000) setting up of pollution under check (PUC) stations. The status of issuing PUC certificates in the test-checked cities as of January 2001 was as follows:

(Number in lakh)

City	Total number of vehicles plying on road	Number of vehicles for which PUC certificates were issued	Number of vehicles plying without PUC certificates (percentage)
Hyderabad and Secunderabad	11.00	4.68	6.32(57)
Tirupati	0.60	0.08	0.52 (87)
Vijayawada	3.44	2.22	1.22 (35)
Visakhapatnam	2.98	2.39	0.59 (20)

T o t a l	18.02	9.37	8.65 (48)
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4.25 lakh vehicles in the twin cities were plying without the PUCs. Of these, 2.07 lakh vehicles were below 70 cc not requiring PUC as per the RTA.

Thus, in Hyderabad/Secunderabad and Tirupati, more than one-half and two-thirds of the vehicles plying on the roads, were either not subjected to emission tests or were not fit for issue of such certificates. However, no action was taken to ensure that only vehicles with PUC certificates plied on the roads. While 4.25 lakh vehicles were plying (in the twin cities) without the PUCs (excluding 2.07 lakh vehicles not requiring PUCs), as per the RTA, Hyderabad, 6060 vehicles which are not under the prescribed pollution levels were identified and CFRR9 notices issued as of May 2001 (information not available in respect of other cities). The RTA did not however, indicate the final action taken in these cases. Moreover, in the absence of enabling powers with RTAs to seize such vehicles the extent of air pollution due to emission of pollutants from such vehicles remains unabated.

(b) Joint inspections conducted in April 2000 at 810 cities/towns by the officials of Transport, Civil Supplies Departments and representatives of public sector oil companies/legal meteorology revealed that 30110 (20 per cent) out of 151410 vehicles violated the emission norms. Such inspections were, however, not conducted thereafter.

ii) Indoor air pollution at Paradise (Secunderabad) and Koti (Hyderabad): As per the report of Environmental Pollution Training and Research Institute (EPTRI), Hyderabad, high SPM levels (mean values of 431 g/cu m and 799 g/cu m respectively) detected indoors at Paradise (Secunderabad) and Koti (Hyderabad) showed the ill effect of vehicular pollution even indoors in residences near RTC crossroads (Hyderabad) located nearly 4 km away from both Paradise and Koti areas.

C. Air pollution due to fuel adulteration

The Ministry of Environment and Forests, GOI, notified in December 1998, the ban on sale and purchase of loose mobil oil at petrol stations and service garages. State Government issued similar instructions in December 2000 for implementation within HUDA limits. However, the Civil Supplies Department, responsible to keep a watch over adulteration of fuel, was unaware of these developments till July 2001, when at the instance of Audit, the Director addressed the Hindustan Petroleum Corporation Limited for obtaining necessary information.

D. Air pollution by storm water drains

Municipal Corporation of Hyderabad (MCH) which is responsible for cleaning the storm water and open drains by desilting and removal of chokes, had been collecting drainage cess as a part of property tax. Underground sewerage system not existing in 40 per cent of MCH area. MCH stated (April 2001) that it was not able to arrest the overflows from sewerage manholes entering the storm water drains, since the underground sewerage system was not existing in 40 per cent of the municipal area. Even the size of the sewerage lines was inadequate and household sewage were connected to storm water drains. Thus, sewage

drains and sullage water was entering the storm water drains contributing to air pollution. It further stated that HMWS&SB12 which is responsible for maintenance of sewerage system was unable to extend the sewerage facilities to the entire area and to remodel the existing lines to arrest overflows from the manholes due to paucity of funds. The fact however, remains that while MCH has been retaining with it the drainage cess collected by it the HMWS&SB has been collecting sewerage cess at 35 per cent of water charges. However, neither the MCH nor the HMWS&SB had taken action to improve the existing defective sewerage system. Government however, did not offer any remarks on their inaction.

7.5.6 Non-implementation of the recommendations of a high level committee

High prevalence of naso respiratory symptoms, chronic bronchitis and bronchial asthma due to vehicular air pollution.

Following an interim order (July 1997) of the Hon'ble High Court of AP in a public interest litigation on vehicular pollution, a Committee constituted to make a survey to find out the extent of pollution caused by motor vehicles in Hyderabad and Secunderabad and suggest measures to be taken to check the pollution, recommended (May 1998) inter alia (a) spot checking of vehicles by teams of RTA and traffic police officials and fines on owners whose vehicles failed to pass the test, (b) Civil Supplies Corporation to take up strict vigilance of fuel adulteration at wholesale points, (c) petrol bunks designated to issue PUC certificates to be counterchecked for calibrated equipment and quality – once in a month, (d) establishment of more pollution check stations, (e) issue of petrol and diesel only to vehicles with PUC certificates and (f) introduction of battery/CNG run vehicles.

Though the State Board submitted proposals to the State government in August 1998 and in October 1999 for implementation of these recommendations it was only in December 2000 that Government issued directions (based on the recommendations of the Committee) to the State Board, RTA, Civil Supplies, APSRTC, etc. The concerned departments/wings were yet (September 2001) to comply with most of these instructions.

7.5.7 Adverse impact of air pollution on human health

Study on health effects from vehicular pollution in the twin cities of Hyderabad and Secunderabad conducted during 1999-2000 by Osmania Medical College, Hyderabad, revealed the following:

(a) The prevalence of respiratory morbidity, attributed to vehicular air pollution. The ventilatory dysfunction among residents in three selected sample areas in Hyderabad revealed high prevalence of naso respiratory symptoms (31 per cent), chronic bronchitis (30 per cent) and bronchial asthma (19 per cent) in commercial areas where there was higher mean and peak levels of SO₂ and NO_x,

(b) A screening (1997-99) of effects of automobile pollution on 633 traffic police constables working in twin cities of Hyderabad and Secunderabad revealed that 67 per cent of the traffic constables screened were having health problems; 29 per cent were suffering from respiratory symptoms, 25 per cent had non-respiratory symptoms, joint pains, eye irritation and low back pain; 6 per cent were suffering from high blood pressure, 7 per cent had diabetes mellitus and 6 constables were found to be suffering from TB.

Government stated (October 2001) that a detailed study was being proposed for

environmental epidemiology studies relating to air pollution impacts.

Performance audit of environmental acts/rules relating to Air Pollution, Andhra Pradesh

The Arunachal Pradesh State Pollution Control Board (APSPCB)

3.3.1 For prevention, control and abatement of air pollution, Government of India (GOI) enacted the Air (Prevention and Control of Pollution) Act, 1981. The Environment (Protection) Act, an umbrella Act which was also more comprehensive and covering the specific and general provisions relating to pollution of the environment including the management of hazardous, biomedical and solid waste, was enacted by Parliament in May 1986. The Bio- Medical Waste (Management and Handling) (BMWMH) Rules were drawn up by the GOI and came into effect from July 1998. The Acts and Rules are applicable throughout the country.

3.3.2 The Arunachal Pradesh State Pollution Control Board (APSPCB) first constituted in July 1993 was reconstituted in March 2000. The APSPCB headed by a part time Chairman who is also the Principal Secretary (Environment & Forests) to the Government of Arunachal Pradesh has 13 official and non-official members representing the Government, local bodies, statutory bodies, companies etc. and a part time Member Secretary who is a Deputy Conservator of Forests. The main functions and activities of the APSPCB are:

- (i) to plan a comprehensive programme for the prevention, control or abatement of air pollution and to secure the execution thereof ;
- (ii) to advise the state government on any matter concerning the prevention, control or abatement of air pollution;
- (iii) to collect and disseminate information relating to air pollution;
- (iv) to inspect air pollution control areas at such intervals to assess the quality of air therein and take steps for the prevention, control or abatement of air pollution in such areas;
- (v) to identify sources of waste generation (hazardous, bio-medical and municipal solid wastes), to notify for proper control and vigilance and to ensure the disposal site of waste had been notified by the state government.

3.3.3 The state government in December 2000 declared the whole of the state of Arunachal Pradesh as an “air Pollution Control Area” but as required under the BMWMH Rules, the prescribed authority who was to be appointed by August 1998, had not been appointed as on date (November 2001).

3.3.4 The source of fund of the APSPCB consists of grants-in-aid from the Central and the State government. A cent per cent check of the Receipts and Expenditure of the APSPCB for the period 1991-92 to 2000-2001 was conducted in audit in May 2001 and the following were disclosed :

Non utilisation of central assistance

3.3.5 Of the APSPCB’s total receipts of Rs.16.45 lakh during the period from 1991-92 to 2000-2001 {Rs.14.24 lakh from the Central Pollution Control Board (CPCB), New Delhi,

Rs.1.99 lakh from consent fees and Rs.0.22 lakh from other receipts}, it has incurred an expenditure of only Rs.1.95 lakh during 1996-97 to 2000-2001 leaving an unutilised balance of Rs.14.50 lakh locked up (Rs.12.64 lakh in bank and Rs.1.86 lakh in equipment and materials procured but not put to use).

Air quality monitoring stations not set up

3.3.6 Before APSPCB was constituted, the CPCB had sanctioned and released (December 1991), Rs.1.99 lakh to the APSPCB towards establishment of two air quality monitoring stations at Itanagar (Rs.1.62 lakh) along with three months advance operation and maintenance costs of two centres (Rs.0.37 lakh). Out of Rs.1.99 lakh, the APSPCB had spent Rs.0.87 lakh during April to August 1996 for procurement of certain instruments and equipment but the remaining amount of Rs.1.12 lakh was retained in a current bank account operated since May 1992 with State Bank of India, Itanagar.

3.3.7 The Chairman APSPCB and Principal Secretary (Environment and Forest) to the Government of Arunachal Pradesh stated (November 2001) that the equipment purchased could not be set up due to non-selection of site and non-appointment of any technical personnel. The reply however, was silent on the irregular procurement of instruments without selection of site and non- recruitment of technical staff. The equipment purchased were lying un-utilised till date (November 2001).

Pollution awareness and assistance centres were not set up

3.3.8 Out of Rs.1.00 lakh received by the APSPCB in February 1996 and July 1999 for setting up of pollution awareness and assistance centres, Rs.0.99 lakh was spent on purchase of furniture and a computer though the sanction prohibited these purchases. Further though these items were purchased the centres were not set up nor awareness on the effects of pollution disseminated to the population in the state.

Non-preparation of Annual Accounts and Annual Reports

3.3.9 The APSPCB is required to prepare Annual Accounts and the same are to be audited by a qualified auditor on the advice of the Comptroller and Auditor General of India. The APSPCB had, however, not prepared its Annual Accounts since its creation in 1993-94.

3.3.10 The APSPCB is further required to prepare an Annual Report giving a true and full account of its activities during the previous financial year and submit this report to the state government by 15 May each year. This Report is also to be laid in the State Legislature within 9 months from the last date of the previous financial year. The APSPCB has not prepared any Annual Report since 1993-94 and its activities has not been assessed since its creation by the State Legislature. The Chairman APSPCB and Principal Secretary (Environment and Forest) to the Government of Arunachal Pradesh in his reply (November 2001) stated that due to non-creation and filling up of post for the Board, the annual Account and Reports could not be prepared. He however, stated that the observation of audit is noted for compliance.

Non-creation of assets despite availability of central assistance

3.3.11 Since inception, the APSPCB has been functioning from the Office of the Principal Chief Conservator of Forests (PCCF) with the help of his staff.

3.3.12 The APSPCB in April 2000 received Rs.8 lakh from GOI for construction of office building, C grade Laboratory and residential buildings but the amount remained un-utilised as of May 2001 due to non- allotment of land by the DC Papumpare. The Chairman APSPCB and Principal Secretary (Environment and Forest) to the Government of Arunachal Pradesh in his reply (November 2001) stated that the C grade laboratory could not be set up as posts for running the laboratory had not been created. The fact remains that besides this no action had been taken to procure the land for instituting the laboratory nor for procurement of the equipment for the same.

3.3.13 The APSPCB had not taken any action despite its existence for over eight years to ensure compliance with any of the Acts or Rules. This is also supported by the fact that against twenty mandatory meetings due to be held by the APSPCB during 1996-97 to 2000-2001 only four were held and with thin attendance. Pollution was not a priority item for APSPCB. The APSPCB did not discharge its specified activities and functions. The APSPCB exists, but only in name. The Chairman APSPCB and Principal Secretary (Environment and Forest) to the Government of Arunachal Pradesh in his reply (November 2001) stated that due to absence of any significant industrial activity in the state the problem of pollution is insignificant. He however, stated that the state government is also taking action to gradually build up the required scientific capability of the Board to enable it to discharge its duties effectively in time to come.

3.3.14 The matter was referred to the Government/APSPCB in August 2001 and reply was received (November 2001) which has been incorporated.

Implementation of Environmental Acts and Rules in relation to Air Pollution, Gujarat

Highlights

To maintain the quality of air and check pollution the concerned Acts/Rules were to be implemented by the State Governments. The Gujarat Pollution Control Board responsible for its implementation in the State was not effectively implementing the provisions of Air Act, Hazardous Waste and Bio-Medical Waste Rules. Consequently large number of units are polluting the air and disposing of hazardous and bio-medical wastes without treatment with impunity.

Ninety five per cent of the industrial units in the State were functioning without consent under the Air Act. Board had no knowledge about the extent of pollution caused by these units. (Paragraph 6.2.5.1)

Board did not evolve any mechanism to ensure that industrial units did not operate after rejection of consent or renewal thereof. Applications for consent of 7767 units were rejected upto March 2001. (Paragraph 6.2.5.2)

The Board did not prepare comprehensive programme and plan for prevention, control or abatement of air pollution as required under the Air Act. (Paragraph 6.2.5.5)

Only 0.03 lakh units out of 0.8 lakh units who were given consent installed air pollution control facilities. (Paragraph 6.2.5.6)

In four regional offices only 11 per cent of the required samples were collected for monitoring installations of pollution control measures during 2000-2001. (Paragraph 6.2.5.7)

None of the brick manufacturers in the State obtained consent under Air Act and installed fixed chimneys. These are emitting untreated pollutants in the air. (Paragraph 6.2.5.10)

The Status of ambient air quality shown by the Board did not give correct picture of pollution level in the State. (Paragraph 6.2.6.1)

No internal or external monitoring or evaluation has been carried out by the Board or by the State Government. (Paragraph 6.2.11)

6.2.1 Introduction

Gujarat is one of the highest industrialised states in India having 1.72 lakh industrial units in small (1.69 lakh), medium and large (0.03 lakh) scale sectors. Of these 0.79 lakh industries (46 per cent) engaged in production/manufacturing of Chemical, Bio-medical, Petrochemical, Textile, Engineering, Ceramic products, etc. cause air pollution, and 0.43 lakh (25 per cent) industries generate hazardous waste.

To preserve the quality of air and control air pollution Government of India enacted the Air (Prevention and Control of Pollution) Act, 1981 (Air Act). Similarly, management of two types of wastes namely, hazardous, and bio-medical wastes is regulated by (i) Hazardous Waste (Management and Handling) Rules 1989 (HW Rules), and (ii) Bio- Medical Waste (Management and Handling) Rules, 1998 (BMW Rules) respectively.

6.2.2 Organisational setup

Gujarat Pollution Control Board, Gandhinagar (Board) plans, executes and advises the State Government on programmes for prevention control or abatement of air pollution and implements the rules in respect of waste management. The Board functions in co-ordination with and under the overall control of Forests and Environment Department (Department).

6.2.3 Audit Coverage

To assess implementation of provisions of various Acts/Rules relating to Air Pollution and Waste Management, relevant records of the Department, the Board and its four Regional Offices at Ahmedabad, Vadodara, Surat and Vapi, Directorate of Transport, Food and Civil Supplies Department, Commissioner of Health and Medical Services, Director of Medical Education and National Institute of Occupational Health for 1995-2001 were test checked (January to May 2001). Important points noticed are discussed below:

6.2.4 Financial arrangement and expenditure

No separate accounts were maintained by the Board for expenditure incurred under Air Act and HW Rules. However, during 1995-2000, as against Rs.32.12 crore provided in the budget of the Board, Rs.14.84 crore were spent by the Board leaving a surplus of Rs. 17.28 crore.

6.2.5 Air Pollution due to emission from industries

6.2.5.1 Industries functioning without consent

Entire State was declared as air pollution control area in August 1984 and specified industries were required to obtain consent from the Board and meet the prescribed norms of emission. With the amendment of Air Act, in December 1987, all the industrial units were required to obtain consent from the Board. However, as against 1.72 lakh industrial units in

the State only 0.10 lakh industrial units have applied for consent as of March 2001, out of which only 0.08 lakh (5 per cent) industrial units were granted consent. In respect of 0.02 lakh cases, consent was rejected. Thus 95 per cent of industrial units in the State were functioning without consent of the Board and were thus effectively not covered under the surveillance of the Board in regard to the provisions of the Air Act. Board had no knowledge about the extent of pollution caused by these units. Ahmedabad, Bharuch, Mehsana, Surat Vadodara and Valsad districts are affected the most by the industrial air pollution.

6.2.5.2 Renewal of Consent

Status of renewal of consent during 1996-2001 was as shown below:

Year	No. of industries required to	No. of industries applied for	Percent age to total consents	No. of consents renewed	Percent age of renewal
1996-97	4855	2167	4	5	2
1997-98	5729	2885	5	1345	4
1998-99	6489	4016	6	2252	5
1999-	7493	4589	6	2482	5
2000-	7980	4759	6	2506	5

Receipt of renewal applications ranged between 45 per cent and 62 per cent whereas consent was renewed for 27 per cent to 56 per cent of the cases. As Of March 2001, only two per cent of total units in the State were in operation with up to date consent. Further out of 7980 units required to renew consent, only 31 per cent did so.

As of March 2001, 1695 applications for consent and 6072 applications for renewal of consent were rejected by the Board for not complying with requirements and files were closed. But, the Board did not evolve any mechanism to ensure that those industrial units (who were refused consent) did not operate after rejection of consent or non- renewal. Thus, there was serious possibility of violation of consent regime by a large number of polluting industries who were refused consent.

6.2.5.3 Consent Register

According to provision of Gujarat Air Rules, 1983, Consent Register is required to be maintained in Form No. XI, which was not adopted by the Board. The register maintained by the Board did not contain information on type of operation or process, consent classification, date of installation of air pollution control equipment, emission standards and consent conditions as required under Air Rules. As a result, various important parameters of control were absent and the administration of consent regime was ineffective.

6.2.5.4 Inadequate monitoring of consent

Out of 100 files selected for audit, the Board produced 41 files to audit. Test check of those files revealed the following:

(a) According to Section 21 of Air Act, consent is required to be obtained by the industries within three months from the date of declaration of air pollution control area (August 1984) or from the date of enactment of Air (Amendment) Act 1987, (December 1987) or before the commencement of business as the case may be. However, except one, none of the units obtained required consent within the stipulated time. There was delay ranging from three

months (Shree Chemicals, Vapi) to more than 11 years (Sin-O-Chem products, Vapi) in obtaining consent.

(b) Consent is granted for a period of one year generally, and should be renewed after expiry of that period on payment of prescribed fees. However, none of the units test checked renewed the consent in time. In 21 cases, consent was not at all renewed for two to 15 years and in remaining 20 cases there was delay ranging from one month to 15 years. Thus, the units continued to pollute the atmosphere for periods ranging from nearly two years to 16 years (inclusive of delay in initial consent as well as renewal).

(c) If the consents were obtained and renewed, consent fee of Rs.6.04 lakh (ranging from Rs.7,000 to Rs.50,000 relating to period up to March 2001), could have been collected by the Board from 41 units alone. As against this, only Rs.1.92 lakh (ranging from Rs.500 to Rs.29,000) were received resulting in loss of revenue of Rs.4.12 lakh (ranging from Rs.1,500 to Rs.20,000) to the Board.

(d) No coercive action under Section 37 of the Air Act was initiated by the Board against any of the defaulting units operating without consent from the Board.

Poor receipt of Environmental Statements from units

6.2.5.5 Environmental Statement

Industrial units requiring consent under Air Act were required to submit environmental statement (environmental audit report) for the financial year to the Board on or before 15th May every year. Details of submission of statements for 1995-2000 was as under:

Year	Number of consented units	Number of units submitted environmental audit report	Percentage
1995-96	5183	292	6
1996-97	6057	187	3
1997-98	6817	250	4
1998-99	7821	281	4
1999-2000	8308	298	4

Board failed to carryout comprehensive survey of industrial units. Only 38 per cent units installed air pollution control facilities. Belated categorisation of units under Air Act Percentage of environmental statement submitted to the total consent ranged from three (1996-97) to six (1995-96). Thus, important control mechanism to monitor the air pollution was practically non-functional.

6.2.5.6 No comprehensive programme or survey for control of pollution

Under the provisions of Section 17 of the Air Act, Board was required to plan a comprehensive programme for prevention, control, or abatement of air pollution and to ensure its implementation. However, no programme was made and no survey was carried out to identify the industries causing air pollution as of May 2001 on the plea of shortage of staff and fund. Board had surplus fund and could have utilised services of outside agencies if their own resources were inadequate. Evidently, Board did not attach due priority to this important aspect of management and control of environmental pollution.

6.2.5.7 Air Pollution Control Facilities

As per the Air Act every person to whom consent was granted by the Board shall install and operate pollution control equipment of prescribed specification in the premises of the industry. However, as of March 2001, out of 0.08 lakh units only 0.03 lakh (38 per cent) units installed air pollution control facilities. Neither information for remaining units was available on record nor any action initiated by the Board against defaulting units.

6.2.5.8 Inadequate sampling

For sampling and monitoring of installations of pollution control measures, under the Air Act industrial units were categorised into Red (Highly polluting), Orange (Moderately polluting) and Green (Least polluting) only from 2000-2001. Collection of samples in test checked regional offices during 2000-2001 was as under:

Name	Category-wise number of industrial units			No. of samples required to be collected	No. of samples collected	Percentage of Col. 4 to Col. 3
	Red	Orange	Green			
1	2a	2b	2c	3	4	5
Ahmedabad	210	782	9	5657	134	2
Vadodara	93	1399	334	7046	1299	18
Surat	584	436	372	9124	703	8
Vapi	235	809	367	6423	520	8

Only 11 per cent samples collected Non-monitoring of emission of TPSs

Thus, even in highly industrialised districts like, Vadodara, Surat and Vapi, collection of samples was only 11 per cent of the required number. The Board stated that samples of gaseous emission were required to be collected only from those industries who have air pollution control measures. The reply was not tenable, as inadequacy of monitoring of industrial emission by the Board would encourage the industrial units to escape from complying with the norms.

6.2.5.9 Emission by Thermal Power Stations

Under the Air Act emission standards of Suspended Particulate Matter (SPM), Sulphur Dioxide (SO₂), and Nitrogen Oxide (NO_x), prescribed for Thermal Power Stations (TPS) were 150 g/CuM, (Microgramme per Cubic Meter) 100 g/CuM and 50 g/CuM respectively. Board officials stated that three out of 20 TPS in the State were not complying with the prescribed standards. However, neither information relating to actual emission by TPSs nor concerned files were furnished to Audit for study. It is doubtful whether Board was monitoring the emissions from these highly polluting units.

6.2.5.10 Dumping of fly ash

To protect environment and prevent dumping of fly ash, Ministry of Environment and Forests issued a Notification in September 1999 for compulsory utilisation of at least 25 per cent of fly ash by manufacturers of bricks operating within 50 kilometers of coal based thermal power station. However, Brick Manufacturers Association refused (July 2000) to comply with the directive on the plea that even two per cent of ash would weaken the brick. Though 38.40 lakh MT of fly ash is dumped every year by thermal power stations mainly in Ahmedabad, Jamnagar, Kheda and Surat districts, Board did not carry out any study on the environmental hazards due to such improper non- disposal.

6.2.5.11 Installation of fixed chimneys by brick kilns

MOEF extended (November 2000) the time limit to change over from moving chimneys to fixed chimneys for all categories of brick kilns by 30 June 2001 subject to furnishing of an affidavit and bank guarantee of Rs.0.30 lakh (large scale), Rs.0.20 lakh (medium scale) and Rs.0.10 lakh (small scale). However, none of the 0.01 lakh existing brick kiln owners in the State either furnished the affidavit and bank guarantee or changed over to fixed chimneys as of May 2001. Further, all of the brick kilns in the State were functioning without consent under Air Act and their emissions were not monitored by the Board.

Un-reliable data of air pollution

6.2.6.1 National Ambient Air Quality Monitoring Project (NAAQMP) Under NAAQMP, Central Pollution Control Board (CPCB) prescribed National Ambient Air Quality Standards for Sulphur Dioxide (SO₂), Nitrogen Oxide (NO_x), Suspended Particulate Matter (SPM), Respirable Particulate Matter (RPM), Lead (Pb), and Carbon Monoxide (CO) with adequate margin of safety, to protect the public health, vegetation and property.

A comparison of status of annual average of ambient air quality standards in four major cities in the State for 1996-2000 vis-à-vis norms (Appendix-LXXV) revealed that while the concentration of SO₂, and NO_x in these cities showed a declining trend and were well within the prescribed limits since 1996-97, that of SPM exceeded the standard by several times in Ahmedabad industrial and commercial areas in 1999-2000. Scrutiny of data for 1999-2000 relating to Automatic Monitoring Station, Ahmedabad revealed that there was no consistency in the figures shown in respect of SO₂, NO_x and SPM.

Even the temperature was shown above 60°C (maximum 69.3°C) during April 2000. Moreover, the result of monitoring by CPCB for 1999-2000 at Ahmedabad showed the following result while those by GPCB (in bracket) had wide variation.

	SO ₂	No _x	SPM
Industrial area	193 (3)	30.9 (23)	550 (1003)
Residential Area	27.9 (12)	29.4 (5)	305 (331)
Commercial area	9 (2)	17.7 (11)	293 (1150)

Thus the readings taken by the monitoring station, Ahmedabad were not entirely reliable and the status of ambient air quality and pollution level in the State needed proper scrutiny. It was also noticed that regular monitoring of only SO₂, NO_x and SPM was done by the Board though RPM, Pb and CO were also to be monitored under NAAQMP.

16 monitoring stations discontinued

6.2.6.2 Non functioning of NAAQMP

There were 16 monitoring stations[□] set up by the Board to monitor air pollution of the ambient air. However, due to non-availability of funds from CPCB, those centres discontinued from 1 April 1997 even while the Board had enough surplus funds to maintain these monitoring stations. This would adversely affect the monitoring of ambient air quality. Reasons for discontinuation of funding by CPCB were not furnished.

Study for air pollution not carried out

Issuance of PUC certificates not monitored

6.2.6.3 Other aspects of air pollution

Other important aspects of air pollution like odours, acid rain, thermal discharge, ozone depletion, etc. which cause environmental degradation also require regular monitoring. The Board did not carry out any study in respect of these aspects except acid rains during monsoon season in 2000 which showed no acidity in the rain water samples.

6.2.6.4 Status of noise pollution

Average noise level during October 2000 in eight cities, as per records of the Board was between 75 decibels and 114 decibels as against the norms of 65 decibels indicating noise pollution between 15 and 75 per cent. However, regular monitoring of noise pollution was not carried out by the Board.

6.2.7 Vehicular pollution

Vehicular population in the State increased from 0.45 million in 1981 to 5.19 million in 2000. Vehicular density per 100 person in three major cities is Vadodara (11), Surat (12) and Ahmedabad (14). Further, 75-85 per cent of total vehicles in these cities are two\three wheelers which significantly contribute to pollution. Moreover, due to high vehicular density on urban areas the speed of vehicles at peak hours is 6-22 km/hr which also increases pollution.

(a) Pollution Under Control (PUC) Certificates

Rule 115(7) of the Central Motor Vehicle Rules, 1989 (CMV Rules) requires all vehicles over one year old to carry a PUC Certificate issued after checking pollution level of the vehicle, by a testing station authorised by the Transport Department. Test check of records of Director of Transport revealed that as on 31 March 2001, 454 agencies were issued licenses for issue of PUC Certificates in the State. However, number of PUC Certificates issued by those agencies was not monitored by the Director. During 1997-2001, 0.76 lakh, cases were registered in 20 districts against vehicles for not carrying PUC Certificates.

(b) Checks for emission standards

The Director of Transport did not carry out any check for compliance of emission standards by vehicles as required under rule.

(c) Use of unapproved fuel by auto rickshaws

Use of kerosene, adulterated petrol and adulterated diesel and other such unapproved fuels in the Vehicles was prohibited. However, it was seen that during 1996-99, in Ahmedabad City alone, cases were registered against 0.10 lakh out of 0.75 lakh Auto Rickshaws (13 per cent) for using Kerosene.

(d) Adulterated fuel

Similarly, during 1998-2000, eight Petrochemical units were found involved in adulteration of petrol and sold 3.14 crore liters of solvent (an adulterant) valued Rs. 42.90 crore to various petrol pumps in Ahmedabad, Mehsana, Panchmahals and Vadodara districts. Seventy- one persons were arrested and out of that 37 were in jail. Though, action was taken against these offending units damage caused to the environment due to adulterated fuel was not assessed.

Audit of Environmental Acts and Rules relating to Air Pollution in Himachal Pradesh**Introduction**

Mention was made in paragraph 6.1 of the Report of the Comptroller and Auditor General of India for the year ended 31 March 2000—Civil-Government of Himachal Pradesh concerning implementation of Environmental Acts and Rules relating to Water Pollution including disposal of Municipal and Bio-Medical Wastes by Himachal Pradesh State Environment Protection and Pollution Control Board (Board).

A further check of the records of the Board for the period 1996-2001 relating to control of air pollution and hazardous waste management in compliance of Air (Prevention and Control of Pollution) Act, 1981 and various rules promulgated to minimise adverse impact of hazardous wastes/chemicals on environment under Environment Protection Act, 1986 was conducted during March-April 2001. This was supplemented by test-check of records of four¹ regional offices and three² laboratories. Test-check revealed the following points:

Accounts for five years were in arrears and details of unspent balance of Rs 3.17 crore not available with the Board.

6.2.2 Financial arrangements

The main sources of income of the Board were contributions made in the form of grants-in-aid by the State/Central Governments including the Central Pollution Control Board (CPCB), fees received for granting consent, sample testing, etc. Annual Accounts of the Board for the years 1996-97 to 2000-2001 were in arrears. The Member Secretary stated (April 2001) that these were at an advanced stage of finalisation.

There was a closing balance of Rs 3.17 crore as on 31 March 2001 in the form of FDRs/saving bank accounts in different banks which was subject to change on the finalisation of accounts. Activity-wise details of unutilised funds lying in various bank accounts were not available with the Board. In the absence of these details, the Board could not implement and effectively monitor its activities.

6.2.3 Air pollution**(a) Non-conducting of survey and non-identification of industrial units**

Detailed survey to assess the level of air pollution and industries causing air pollution was not conducted. The whole of Himachal Pradesh except Kinnaur, Lahaul and Spiti and Chamba (Pangi and Bharmour blocks) districts was declared (October 1981) as air pollution control area or areas for the purpose of Air Act, 1981. It was noticed in audit that no study was conducted by the Board to determine the air pollution level in the State so as to combat air pollution in a phased manner. Also, no survey to identify the industries causing air pollution was carried out, though Industries Department had intimated (August 2001) the establishment of about 28,900 industrial units in the State as of March 2001. While three³ regional offices confirmed that no such detailed survey was conducted, the Member Secretary stated (April 2001) that air quality was being surveyed at eight air monitoring stations. The reply does not indicate why detailed survey could not be conducted to identify the industries causing air pollution although it is a pre-requisite for determining the action that is required to be taken to arrest the pollution levels and reduce them.

The Member Secretary further stated (April 2001) that Board had identified 1,185 industries (March 2000) based on applications received under consent mechanism for granting consent to establish/operate units in an air pollution control area. He further added that compilation work for inventorisation of industries was in progress. **The reply is not tenable as identification of units 1 Baddi, Jassur, Paonta Sahib and Parwanoo. 2 Jassur, Paonta Sahib and Parwanoo. 3 Baddi, Jassur and Paonta Sahib based on applications** received cannot be substituted for comprehensive survey to ensure that all the existing industrial units were covered under consent mechanism and brought under the purview of the Act. Further, a test-check of individual files of industrial units established in three districts under four regional offices revealed that 33 units were operating without any consent of the Board. Thus, existence of more air polluting industries other than the units identified could not be ruled out.

(b) Anti air pollution devices

Air Act, 1981 requires that every person to whom consent was granted should install anti air pollution devices in the premises. According to the information supplied (April 2001) by the Board, 1,185 industries had been given consent upto March 2000 after ensuring that anti air pollution devices had been provided by them. The data for the year 2000-2001 was stated (May 2001) by the Member Secretary to be under compilation.

The contention of the Board that anti air pollution devices had been provided in all the units is not tenable because test-check of records in three regional offices revealed that anti air pollution devices had not been provided in 19 industrial units established between June 1989 and February 2000. The concerned Environmental Engineers stated (March-April 2001) that either notices were being issued or the work for providing the devices was in progress in some of the cases. Thus, these units had continued to operate without the devices.

(c) Air quality monitoring

To assess the nature and extent of the requirement for pollution control measures and their impact on ambient air quality, CPCB sanctioned in 1985 establishment of National Ambient Air Quality Monitoring (NAAQM) stations. The programme was started in the State in October 1987 and three parameters were identified for monitoring viz. Suspended Particulate Matter (SPM), Sulphur Dioxide (SO₂) and Nitrogen Oxide (NO). Ambient air quality monitoring was being done by the Board at eight stations, established at a cost of Rs 7.24 lakh between October 1987 and April 1993. The Board had been collecting monthly data and was sending it to the CPCB for further evaluation.

It was seen in audit that the concentration of SPM was in excess of the fixed limits at six out of the eight stations. Data were based on recorded monthly averages and the number of months when the concentration was in excess of prescribed norms ranged from 1 to 49 months among the stations during 1996-2001. No action in respect of unsatisfactory reports had been taken.

(d) Monitoring of polluting vehicles

(i) To ensure that the standards for emission of air pollution from automobiles were complied with as required under the Air Act, 1981, the State Government in consultation with the Board is required to give instructions, to the concerned authority incharge of registration of motor vehicles. The Member Secretary stated (April 2001) that no such instructions were

issued.

Vehicular smoke monitoring was undertaken by the Board as per standards laid down under Environment (Protection) Act, 1986 at Shimla and other places in the State during 1996-2001. Out of 20,424 vehicles checked, 7,074 vehicles were found to cause pollution beyond the prescribed level.

Similarly, Transport Department responsible for controlling pollution caused by automobiles checked 1,39,526 vehicles during 1996-2000 and found 12,253 vehicles causing pollution beyond the prescribed level. The Director (Transport) stated (April 2001) that vehicles found polluting the air beyond the prescribed level were being challaned if they failed to rectify the emission within a week. No other preventive/constructive measures were taken by the department. It was observed that the standards prescribed by the Board and the Transport Department were different for monitoring the vehicular emissions.

(ii) Under the Motor Vehicle Rules, it was compulsory for every motor vehicle in the State to carry a valid Pollution Under Control Certificate (PUCC) issued by Transport Authority or its authorised centres. PUCC so issued was valid for three months. 95 per cent vehicles were plying without valid “Pollution Under Control Certificates” in the State.

During 1996-2000, the Transport Authority and its authorised centres issued 1,27,273 PUCCs and 12,253 vehicles found polluting beyond the prescribed standards were denied PUCCs. It was, however, noticed that 25,96,496 estimated PUCCs were required to be issued during the said period on the basis of 1,93,336 vehicles registered upto March 2000. Thus, about 95 per cent vehicles continued to ply on the State roads without a valid PUCC. It was further noticed that no mechanism was evolved by the Board/Transport Authority for conducting quality control tests of service stations authorised to issue PUCC.

Vehicular pollution, thus, remained unchecked in the absence of enforcing the required pollution norms adequately. The Board admitted (April 2001) that service stations authorised to issue PUCC also needed to be tested for quality control.

6.2.6 Levy and recovery of consent/authorisation fee

Industries and medical institutions were required to pay consent authorisation fee at prescribed rates.

Consent/ renewal/ authorisation fee of Rs 15.97 lakh was recoverable from 502 units.

(i) A check of records revealed that during 1996-2001 consent/renewal fee of Rs 13.99 lakh had not been realised in the case of 423 units. Similarly, fee of Rs 1.98 lakh for grant of authorisation was awaiting realisation from 79 units generating hazardous waste. It was also noticed that as against 1,185 industries identified under Air Act, the ledger was being maintained for 655 units only. Under Hazardous Waste (Management and Handling) Rules, 1989 out of identified 304 hazardous units only 81 units were found entered in the ledger. The Member Secretary stated (April 2001) that records could not be completed for want of sufficient manpower. In the absence of these details the correctness of consent/renewal fee covering all the units could not be verified in audit.

(ii) There were 122 Government hospitals and public health centres in the State generating infectious and hazardous wastes. Further, workshops of the Himachal Road Transport

Corporation and Public Works Department were also covered under Hazardous Waste (Management and Handling) Amendment Rules, 2000. In none of these cases authorisation fee had been recovered.

6.2.7 Non-setting up of Awareness Centres

MOEF had conveyed (December 1995) the sanction for setting up of Pollution Awareness and Assistance centres in the State and released grant of Rs 1.25 lakh to the Board. It was noticed that instead of setting up the centres an expenditure of Rs 13.23 lakh including amount of grant received was incurred during 1995-96 by diverting excess amount from its own sources on purchase of television, fax/photo machines, furniture/furnishings, telephone instruments, etc., for the Board's office. Thus, the very purpose of establishing centres to educate the public about environmental risks was not achieved. The Board was asked to justify this expenditure (April 2001). Reply was awaited (May 2001).

The matter was referred to the Government in May 2001; reply had not been received (August 2001).

Implementation of the Air (Prevention and Control of Pollution) Act, Karnataka

Highlights

Implementation of The Air (Prevention and Control of Pollution) Act, 1981, The Environment (Protection) Act, 1986 and rules framed thereunder and Hazardous, Bio-medical and Municipal Solid Wastes Management Rules, by State Government through Karnataka State Pollution Control Board (Board) and Commissioner of Transport and other authorities was inadequate and ineffective. Only 0.13 lakh out of total 2.70 lakh industrial units are under the purview of these Acts and Rules. Ambient Air Quality Monitoring Stations (AAQMS) were confined to only two cities (Bangalore and Mysore). Board had not established air quality monitoring stations in other cities though funds were available. Due to lack of adequate monitoring stations, analysis of air samples by the Regional Offices was inadequate. Analysis of emission from industries was only marginal. Particles generated by stone crushing units were not analysed at all. Automobiles contributed to air pollution on a large scale (2357.92 MT per day in Bangalore city and 6116.49 MT for the State). The Commissioner of Transport, however, did not monitor implementation of this component. In 3 districts, no inspection of vehicles was carried out by Regional Transport Officers (RTO). Board had no information about the quantity of bio- medical and hazardous waste generated and its disposal by 50 per cent of health care establishments and industries. In view of these deficiencies, the Board's machinery was largely non-functional.

Board had not identified /covered 95 per cent of industries registered with Department of Industries and Commerce. Out of 0.13 lakh industries identified, 7420 were in operation as of March 2001. Of these, 2623 and 605 industries respectively were working without consent and Air Pollution Control Systems in violation of Acts/Rules and 2308 had not even applied for consent. Diesel Generator sets and Stone crushers had not been brought under the purview of Acts/Rules. (Paragraph 3.1.5, 3.1.7(b) and (d))

Shortfall in Ambient Air Quality test ranged from 61 to 29 per cent of targets in Bangalore and

Mysore and in five locations, pollutants exceeded the prescribed standards by 19 to 846 per cent. In other cities Ambient Air Quality Monitoring Stations had not been established. (Paragraph 3.1.6 (a) and (b))

Emission from industrial units was not analysed to the extent of 96 to 89 per cent. Particles generated by stone crushers had not been analysed at all though they caused significant pollution through suspended particulate matter (SPM). (Paragraph 3.1.7 (a) & (b))

Shortfall in inspection of industries by the Board increased sharply from 15 per cent in 1998-99 to 54 per cent in 2000-01. (Paragraph 3.1.8)

State Government had not categorised areas into industrial, residential and silence areas. (Paragraph 3.1.9)

Regional Transport Officers in three test-checked districts did not monitor vehicular emission. (Paragraph 3.1.13)

6233 units out of 6762 (6284 industries and 478 Hazardous waste generating units) had not submitted environmental statements. (Paragraph 3.1.14(iv))

3.1.1 Introduction

Presence of pollutants in air beyond certain limits, discharged by industries and heating process etc., cause environmental pollution and adversely affect living organisms and natural resources. Government of India enacted following Acts and Rules for prevention and control of air and other pollution of environment:

- (i) The Air (Prevention and Control of Pollution) Act, 1981 (Act)
- (ii) The Environment (Protection) Act, 1986 and Rules 1983 (Acts/Rules)
- (iii) The Hazardous and Bio-medical Wastes (Handling and Management) Rules (Rules), 1989
- (iv) Municipal Solid Wastes (Management and Handling) Rules, 1999.

In June 1992, Government of India framed a policy statement for abatement of pollution. Government of Karnataka framed the Air (Prevention and Control of Pollution) Rules in 1983. These Acts and Rules prescribed, inter alia, the following measures for prevention, control and abatement of pollution:

- (i) Coverage and identification of industries to bring them within the purview of Act and Rules.
- (ii) Setting standards for ambient air quality as well as standards for emission of air pollutants by industries and automobiles.
- (iii) Establishing laboratories.
- (iv) Prosecution of such industries/persons not complying with the prescribed standards of emission.

3.1.2 Organisational set up

The Principal Secretary, Forest, Environment and Ecology was responsible for implementation of Acts/Rules and monitoring of various programmes for prevention and control of Air Pollution. While Karnataka State Pollution Control Board (Board) was the main agency for implementation of Acts and Programmes, other Departments (Police, Transport and Forest) supplemented the efforts of the Board.

3.1.3 Audit Coverage

Implementation of the Air Act and Rules was reviewed through test-check of records in Regional and Divisional Offices of the Board, Regional Transport Office, District Industries Centres, Zilla Panchayats, Municipalities and Corporations in six districts. Besides, details were collected from Secretary, Ecology and Environment Department, Commissioners for Transport and Industries and Commerce. The important audit findings are discussed below:

3.1.4 Budget provision and Expenditure

As against budget provision of Rs.37.70 crore, expenditure was Rs.10.54 crore on various programmes of Department of Ecology and Environment which included expenditure of Rs.1.84 crore for Prevention and Control of Air Pollution from 1996-97 to 2000-01. Out of Rs.1.84 crore, Rs.37.31 lakh released to the Board during March 1999 for purchase of Ambient Air Quality Monitoring equipment remained unutilised as of March 2001. No reasons had been furnished for non-utilisation of these amounts. Board spent Rs.44.30 crore out of total receipts of Rs.73.73 crore (Central grant Rs.0.78 crore, State Government grant Rs.7.39 crore, Central Pollution Control Board (CPCB) grant Rs.0.79 crore, Board receipts Rs.63.03 crore and opening balance of Rs.1.74 crore as on 31 March 1996). Board had accumulated investment of Rs.37.23 crore as on 31 March 2001.

3.1.5 Poor identification and coverage of polluting industries

According to Section 17 of the Act, Board was to plan comprehensive programmes for prevention and control of air pollution, conduct inspection of air pollution control areas, collect and disseminate information on industries causing air pollution. Further, no person could operate any industrial plant in an air pollution control area without obtaining consent from Board as per Section 21 of the Act. This implied that Board was to conduct periodical survey in order to identify industries causing air pollution and bring them under consent regime. Board had neither conducted survey nor prepared any comprehensive programmes for coverage of air polluting industries. However, on the basis of information furnished by the Department of Industries and Commerce, Chief Inspector of Factories and Boilers and Inspections, Board identified 0.13 lakh (4126 industries during 2000-2001) out of 2.70 lakh industries registered (March 2001) with Department of Industries and Commerce. Out of 395 industries cleared by High Level Committee (34) and State Level Single Window Agency (361), 114 industries (9 with investment of more than Rs.50 crore, 105 with investment of more than Rs.1 crore but less than Rs.50 crore) had been established during 1998-2001. Board had no information regarding number of industries working without consent and Air Pollution Control Systems (APCS) even out of these 114 industries. Details regarding number of industries cleared by District Level Single Window Agency working without consent and APCS were also not available with the Board. However, the position regarding industries working without consent and APCS out of 0.13 lakh industries (Red – 4881, Orange – 2241, Green – 5812!) were as follows:

Year	Number of Industries in operation	Number of industries which have		Number of industries operating	
		Obtained consent	Not obtained consent	with APCS	without APCS

1996-97	4922	1793	3129 (64)	4086	836 (17)
1997-98	4526	2479	2047 (45)	3736	790 (17)
1998-99	5778	3269	2509 (43)	4511	1267 (22)
1999-2000	6284	4668	1616 (25)	5349	935 (15)
2000-2001	7420	4797	2623 (35)	6815	605 (8)

2623 and 605 industries out of 7420 were operating without consent of Board and APCS respectively. Categorisation of industries by Board not reliable (Figures in bracket indicate percentage). Of 2623 industrial units which had not obtained consent, 2308 units had not even applied for consent and continued to operate in contravention of provisions of Section 21 of the Act. Details regarding the period from which these had been working without consent and adoption of APCS were also not available with the Board. Thus, monitoring of the defaulting units was ineffective.

Even though Board had left out 95 per cent of industries and not categorised these as red, orange and green, it did not indicate any specific steps to cover huge shortfall in identification of industries but merely stated (June 2001) that action would be taken to cover all air polluting industries.

Regional Officers (RO) (Raichur, Mangalore and Mysore) categorised 5 industries engaged in manufacture of industrial gases, liquor, oxygen and ice and discharging pollutants into atmosphere as non-polluting on the basis of their own inspection. However, audit scrutiny of inspection report and other records regarding manufacturing process revealed that these industries were actually discharging pollutants into atmosphere. Reasons for such wrong classification was not evident. At the instance of Audit, ROs agreed to bring these industries under the purview of the Acts. Thus, the categorisation of polluting industries needs scrutiny. Board needs to examine the matter to fix accountability. As of March 2001, though 286 foundries and 1596 brick kilns, which were polluting, were registered with the Department of Industries and Commerce, the Board had not taken any steps to bring these units under consent and ensure adoption of APCS as prescribed in Acts/Rules.

3.1.6 National Ambient Air Quality Monitoring System

Board had not established AAQMS in cities other than Bangalore and Mysore

(a) Pollution status

With a view to evaluating air quality and assess pollution status, CPCB introduced in 1984-85 'National Ambient Air Quality Monitoring System' (NAAQMS). This was also implemented by the Board in addition to its own programme. The system envisaged establishing monitoring stations and sample analysis for every eight hours at each station and assessment of presence of primary pollutants (Suspended Particulate Matter-SPM, Respirable Suspended Particulate Matter-RSPM, Sulphur di-oxide-SO₂, Oxides of Nitrogen-NO_x) as against standards prescribed under Act/Rules.

The CPCB assessed pollution status at five locations in Bangalore city while Board did so in seven locations. According to annual average values furnished by the Board, pollutants exceeded the prescribed standards by 16 to 29 per cent in two (Anandrao Circle and KR Market) out of seven locations. However, pollutants significantly exceeded (1 to 4 times) the prescribed limit in all five locations where CPCB assessed pollution status as detailed below:

Name of the Pollutant	Prescribed standard	Value as obtained in different locations/stations (Percentage of excess in brackets)	
		Minimum Range	Maximum Range
Suspended Particulate Matter	200 µg per cubic metres of air	263 to 682 (32 to 241 per cent)	568 to 1892 (184 to 846 per cent)
Respirable Suspended Particulate Matter (PM 10)	100 µg (Cubic metre)	119 to 236 (19 to 136 per cent)	182 to 564 (82 to 464 per cent)

In respect of other two pollutants (Oxides of Nitrogen and Sulphur Dioxide) the prescribed standards exceeded by 3 to 81 per cent during 5 to 13 months during 1997-98 to 2000-01. Ambient air quality had not been monitored for Lead and Carbon Monoxide. According to results obtained by the Principal, Bapuji Institute of Engineering and Technology, Davanagere who conducted ambient air quality test (SPM only) in 6 locations in Davanagere city and Harihar town from 1998-99 to 2000-01, the presence of SPM ranged between 661 to 739 (3 to 4 times above limit) in one location and 236 to 646 in other locations. Board had not established any additional AAQMS after 1996-97 as proposed in the Annual plans though there was no shortage of funds.

(b) Shortfall in ambient air quality tests

In Bangalore and Mysore, 61 to 29 percent of targets of analysis were not achieved. As prescribed in Schedule VII to Rule 3B of Environment Rules, 1986, ambient air quality test was to be monitored every eight hours for each station twice a week. According to guidelines/norms prescribed by CPCB and adopted by the Board, number of samples to be analysed for 3 to 4 pollutants (4 from 1999-2000) each year for seven stations (five under NAAQM and two under Board Programme) established at different locations in Bangalore and Mysore and achievement thereagainst were as under:

Year	Number of samples to be analysed	Number of samples actually analysed	Shortfall
1997-98	10920	4240	6680 (61%)
1998-99	10920	6436	4484 (41%)
1999-2000	11232	7992	3240 (29%)

Thus, there was 61 to 29 per cent shortfall in sample analysis for ambient air quality for which no reasons were assigned. In respect of other cities/areas where AAQMS had not

been established, Regional Officers who had been provided with necessary equipment and technical/scientific staff were to collect and analyse samples for monitoring air quality. However, the Board had not prescribed any target for sample analysis.

In five test-checked districts (Davanagere, Raichur, Mangalore, Hassan, Dharwad), number of samples analysed ranged from 23 to 51 each year and total of 659 samples were analysed during 1999-2001. In the absence of targets, the adequacy or otherwise of sample analysis could not be verified in audit.

(c) Non-functional Ambient Air Quality Monitoring Stations

5 AAQMS had not been working State Government released (March 1997) Rs.30 lakh to the Principal Investigator, Centre for Atmospheric Sciences, Indian Institute of Science, Bangalore for design, fabrication and setting up of five AAQMS and their maintenance for one year. These stations established in December 1998 at different places in Bangalore city stopped working frequently and became defunct from June 1999 even before expiry of maintenance period due to malfunctioning of certain components. Though these components were reportedly (February 2000) replaced, the equipment remained non-functional. Thus, expenditure of Rs.30 lakh on these stations had been unfruitful.

3.1.7 Shortfall in analysis of air emission

Shortfall of 96 to 89 per cent in drawal of samples for emission

(a) Emission from industries

According to provisions of Section 22 of the Act, no industrial or processing unit or person can discharge into air, emissions containing environmental pollutants in excess of the prescribed standards. Board was to ensure compliance with this provision by drawing samples of emission and analysing the same. According to norms prescribed by the Board, details regarding number of samples to be drawn and analysed on the basis of number of industries in operation and achievement thereagainst were as follows:

Year	Number of samples to be drawn	Number of samples actually drawn	Shortfall	Percentage
1996-97	7609	308	7301	96
1997-98	7371	502	6869	93
1998-99	8380	404	7976	95
1999-2000	10062	1157	8905	89
2000-01	10465	1097	9368	90

Member Secretary of the Board stated (May 2000) that necessary action would be initiated to avoid such shortfall. Out of 3468 emission samples collected and analysed, details regarding number of samples in respect of which prescribed standards were not fulfilled had not been maintained by the Board. However, in 39 out of 107 emission samples analysed by Central laboratory from 1998-99 to 2000-2001, pollutant (SPM) exceeded the prescribed standard. In

three out of 6 test-checked districts, number of samples (emission from industries) drawn were meagre each year ranging from 1 to 5 during 1997-2001 as against 4752 samples required to be analysed as per norms. Stack samples were not at all analysed for four, three and two years in Davanagere, Hassan and Dharwad districts. The ROs attributed the shortfall in sample analysis to inadequate staff. The reply was not tenable as shortfall in sample analysis was almost hundred per cent as against deficiency of 39 per cent of sanctioned strength in scientific and technical cadres (sanctioned-36, working-22). Out of total 12 samples drawn in these three districts, in respect of three samples, pollutants exceeded the standards prescribed.

Further, scrutiny of Register of Sample Analysis revealed that emission samples had been analysed generally for SPM only and samples had not been analysed for other pollutants (SO₂ and NO₂). Large shortfall in sample analysis and failure to analyse samples for all types of pollutants rendered implementation of the Act ineffective.

(b) Particles generated by stone crushers

Particles generated by stone crushing units not at all monitored Board was to analyse samples for SPM in respect of particles generated by stone crushers twice a month throughout the year for each stone crusher, drawing samples at a distance of 40 metres from an isolated unit as well as from a unit located in a cluster in order to ensure that presence of SPM was within the standards prescribed in Schedule 1 to Rule 3 of Environmental Rules. Though 916 stone crushers were working in the state, particles generated by stone crushers had not been monitored at all.

The huge shortfall in analysis of air samples (61 to 29 per cent) and emission from industries (96 to 89 per cent) and total absence of analysis in respect of stone crushers was not justified as Board had 74 per cent of sanctioned strength in technical and scientific staff and appropriate equipment. Evidently, there is need for examining the priority set by the Board for these areas.

(c) Emission due to fuel wood consumption

According to standards prescribed (February 1989) by the Board, when one MT of fuelwood is burnt, it causes emission of air pollutants (SPM) of 6.5 kg. During 1997-98 to 2000-01, 7.78 lakh cubic metres (2.73 lakh MTs) of fuelwood had been sold by Forest Department. According to standards prescribed by the Board, 1771.27 MTs of SPM had been emitted into air. The consumption of fuelwood for domestic purpose could be reduced to the extent of 40 per cent (as per circular issued in July 1994 by Rural Development and Panchayat Raj Department) by using to full extent the improved chullahs distributed under 'National Programme of Improved Chullahs' (NPIC) implemented by Zilla Panchayats (ZP)/Taluk Panchayats (TP). However, during 1996 to 2001 as against targeted distribution of 1.26 lakh chullahs under the scheme, only 0.42 lakh chullahs (33 per cent) were distributed in five test-checked districts. Failure of ZP/TP to achieve the prescribed target affected air pollution adversely.

(d) Non-monitoring of emission from Diesel Generator sets

As of March 2001, 19764 Diesel Generator (DG) sets had been registered with Electrical Inspectorate. The Board had not brought under the purview of Acts/Rules those DG sets

installed in other than industries. In respect of DG sets installed in industries, the Board stated (September 2001) that as no limit was fixed for sulphur dioxide, emission from DG sets had not been monitored. The reply was not tenable as it was the responsibility of the Board to fix the limit as prescribed in Section 17 of the Act and arrange for their monitoring due to the potential of pollution from these industries.

3.1.8 Inspection

According to Section 24 of the Act, the Board was vested with the power to conduct inspection of industrial or processing units etc., to ascertain compliance of the provisions in Acts/Rules, examining/testing pollution control equipment. According to norms prescribed (February 1996) by the Board, frequency of inspection was as follows:

	Red	Orange#	Green#
Medium	Once in 3 months	Once in six months	Once in a year
Small	Once in 6 months	Once in a year	Once in two years
Large		Once in every month	

Details regarding categorisation of industries as red, orange and green were available from 1999-2000. Targeted inspections and achievements as per the earlier norm of 60 inspections per Regional Office during 1996-97 to 1998-99 and as per the revised norms from 1999-2001 were as follows:

Year	Number of inspections to be	conducted	Shortfall	Percentage
1996-97	108	19	8878	8
1997-98	108	81	2700	2
1998-99	108	91	1625	1
1999-2000	193	105	8793	4
2000-2001	264	121	14358	5

Shortfall in inspection of industries ranged from 15 to 82 per cent from 1996-97 to 2000-2001

Though number of inspections increased, the units not inspected also increased sharply. This indicated that the Board needed to reschedule its inspections appropriately. Member Secretary stated (May 2001) that shortfall in inspection was due to priority given for inspection of highly polluting industries. The reply was not tenable as Board had not maintained separate details regarding number of inspections of industries categorised as Red. However, as against 4596 and 6624 inspections to be conducted as per norms in respect of 383 and 552 Large Red category of industries, 1824 and 1753 inspections were conducted in respect of all large industries during 1999-2000 and 2000-2001 respectively. Even then, there was shortfall of 60 and 74 per cent during 1999-2000 and 2000-01 respectively. Due to inadequate inspection, larger number of industries operating without consent and without adopting APCS were not detected.

3.1.9 Failure to monitor noise pollution

State Government had not categorised areas into industrial, residential and silence areas

State Government/Board did not monitor noise pollution on regular basis except on complaints. Details regarding number of complaints attended, number of cases where noise pollution exceeded prescribed standard vide Rule 3 of Environmental Rules, 1986 and action initiated on such cases were not available with the Board. Even in test-checked districts, measurements taken for monitoring of noise pollution were insignificant (11 measurements by 3 Regional Offices and 90 measurements by 21 Regional Offices) from 1996-97 to 2000-01. State Government had not categorised areas into industrial, residential or silence zone/areas (area within less than 100 sq. metres around hospitals, educational institutions and courts) as required under Noise Pollution (Prevention and Control) Rules, 2000.

3.1.13 Ineffective monitoring of vehicular emission

Vehicular emission contains air pollutants like carbon monoxide (CO), Hydrocarbon (HC), Oxides of Nitrogen (NOX), lead, Oxides of Sulphur and Sulphur. Pollution load due to emission of various pollutants into air by vehicles for average distance ranging from 40 to 207 kms covered per day was as follows according to World Health Organisation norms.

Data indicated that emission from vehicles contributed to air pollution on large scale.

As of	Number of vehicles registered in (in lakh)		Pollution load (in MT)	
	Bangalore city	Whole state	Bangalore city	Whole state
March 98	11.30	28.04	1814.32	4695.69
March 2001	14.74	36.91	2357.92	6116.49

To prevent and control air pollution due to vehicular emission, State Government ordered (September 1991 and September 1995) that Commissioner for Transport, Director General and Inspector General of Police and Board should check and ensure that vehicular emission conformed to standards prescribed in Acts/Rules. They were required to furnish compliance report to Secretary to Government, Department of Ecology and Environment.

The RTOs were to monitor vehicular emissions by using equipment and also to check the vehicles for possession of Pollution Under Control (PUC) certificate. As against the target of 16.55 lakh vehicles for the whole State prescribed for check by Commissioner for Transport for emission monitoring, 8.55 lakh vehicles (52 per cent) were checked during 1996-98 for possession of PUC certificates issued by authorised emission testing centres. No targets were prescribed by the Commissioner for Transport from 1998-99 onwards and no compliance report was sent by him to Government. Consequently, percentage of vehicles checked for possession of PUC, declined significantly to 14, 12 and 8 per cent of registered vehicles during 1998-99, 1999-2000 and 2000-01 for the State as a whole. Even while the level of pollutants in ambient air in Bangalore city increased one to four times (263 g to 1892 g per cubic metre) during 1998-2001, the number of vehicles checked for possession of PUC declined from 21 per cent (1998-99) to 13 per cent (2000-01) of the vehicles registered and in

use. In 11 districts/regions less than one per cent of vehicles were checked while in other 12 districts/regions it ranged from 1 to 5 per cent of the vehicles registered during 2000-01. RTOs in 3 (Davanagere, Dharwad and Raichur) test-checked districts did not directly monitor vehicular emission. The RTOs (Hassan, Raichur and Mysore) stated (May 2001) that emission could not be tested as equipment (smoke meter, gas analyser) used to go out of order frequently. Scrutiny revealed delay of 10 to 24 months in arranging repairs and RTOs failed to initiate timely action. Thus, monitoring vehicular pollution in Bangalore and other cities in the State was grossly inadequate and ineffective.

3.1.14 Other points of interest

(i) Non-recovery of consent fees

(a) Consent fee payable by industries etc., under the Acts/Rules was revised in December 1996 and reduced in April 1998. Arrears of consent fees due to revision for the State as a whole was not available with the Board. Scrutiny of records revealed that consent fee of Rs.27.20 lakh for the period from December 1996 to March 2001 in accordance with revised rate had not been paid by 53 units in test-checked districts. The regional officers stated that notices were issued for recovery of the dues.

(b) Failure of the Board to bring 2308 industrial units and 466 units generating hazardous waste within the purview of the Acts and Rules resulted in non-realisation of consent fee of Rs.37.26 lakh for one year.

(c) The rate of consent fee leviable on any industrial unit depended on capital investment. However, in respect of 169 software units located all over the State, consent fee was levied with reference to investment on diesel generators instead on total investments. It was stated by the Member Secretary of the Board that proposal had been sent (June 1999) to Government suggesting amendment to rules. However, the proposal had not been approved. The decision of the Board to levy consent fee with reference to investment on diesel generators only without approval from Government was contrary to rules. This resulted in loss of consent fee of Rs.5.13 lakh for one year.

(ii) Non-installation of laboratory equipment

Out of Rs.2.70 crore spent by the Board on purchase of various equipment under the programme of upgradation of laboratories implemented with World Bank assistance, 8 equipment costing Rs.55.06 lakh were not installed in three laboratories (Dharwad, Mysore and Davanagere) even after one to two years of purchase. The Divisional officers in charge of laboratories (Davanagere) stated that firms who supplied equipment had not responded for installation inspite of repeated reminders and in one laboratory installation was pending for want of accommodation (Mysore).

(iii) Poor working of laboratories

Board had established seven regional laboratories and one central laboratory in the State. The primary objective of these laboratories was to analyse water and stack samples and report results of analysis to respective ROs. As against

45853 (19372 during 1999-2000 and 26481 during 2000-01), water and stack samples required to be collected as per norms (February 1996), only 12877 samples were collected

and analysed resulting in shortfall of 32976 samples (72 per cent). The RO attributed (April to May 2001) shortfall in samples analysis to inadequate staff. The reply was not tenable as 70 per cent of sanctioned strength in scientific and technical cadre were in position.

(iv) Non-submission of environmental statements

Industries were to furnish to Board annual environmental statements which contained, inter alia, details of pollution and its control method. Out of total 6762 units (industries 6284 and hazardous waste generating units-478), only 529 submitted environmental statements to the Board. The Member Secretary of the Board stated that there was no provision for initiation of penal action, but submissions of such statements was being insisted upon. In view of the poor response by the units, the necessity of provisions for initiating penal action needs to be considered.

3.1.15 Monitoring

Monitoring of implementation of Acts/Rules by Secretary to Government, Ecology and Environment was inadequate as:

- (a) 2623 industries and 466 industries producing hazardous waste and 33 HCEs producing bio-medical waste had been operating without consent and authorisation respectively in violation of Acts/Rules,
- (b) stone crushing units were not covered under the Acts/Rules,
- (c) Proper functioning of AAQMS set up in Bangalore city could not be ensured,
- (d) Instructions contained in Government order of September 1991, regarding inspection of vehicles for emission tests were not complied with. Management of bio-medical and hazardous waste was poor while compliance with standards for municipal solid waste management by Municipalities was not monitored at all. Pollution load due to emission from automobiles during 1996-97 to 2001 was not assessed though it significantly contributed to air pollution and Board was also required to monitor vehicular emission. Thus, Secretary, Board and other authorities did not ensure compliance with standards prescribed for various air and other pollutants.

3.1.16 The matter was referred to Government in July 2001; reply had not been received (September 2001).

Implementation of Environmental Acts and Rules in regard to Air Pollution, Kerala

Highlights

Clean environment is of prime importance for the health of the people. A review of enforcement of the Air Act and Waste Management Rules in Kerala revealed serious deficiency in identifying polluting industries, monitoring emission from factories, invoking penal provisions against polluting units and controlling pollution from vehicular emissions. Enforcement of Hazardous Waste Management, Bio-Medical Waste and Municipal Solid Waste Rules were ineffective.

- *Policy on abatement of pollution and the environment policy drafted by the State Government in 1993 and 1994 respectively were not adopted even as of March 2001.*
- *Out of 2.18 lakh units registered in the State, only 5250 units were identified by the PCB under the Air Act as of March 2001. Of these, only 1798 units were brought under consent regime.*

- *There was heavy shortfall in monitoring the emission of even consented units. Stack monitoring was done only in a few industries. Surprise inspections in 19 industrial units disclosed major shortcoming in pollution control measures in these units.*
- *The deficiencies in the implementation of National Ambient Air Quality Monitoring project pointed out by the CPCB in 1996 and 1998 remained unrectified even in 1999.*
- *Concentrations of Suspended Particulate Matter in respect of samples of air in Kochi City far exceeded the prescribed standard.*
- *Only 32 authorizations were issued out of 89 units applied under the amended rules.*
- *Though the Noise Pollution (Regulation & Control) Rules 2000 came into force in February 2000, classification of areas in the State and prescribing the enforcement agency was not decided by the State Government as of October 2001.*
- *Eight vehicles acquired by Motor Vehicle Department for mounting pollution testing equipment were not used. Fourteen Gas Analysers and Smoke Meters acquired during October 1993 to November 1998 had not been used for road checks. The RTOs were not regularly monitoring the smoke testing stations.*
- *PCB has not prepared its Annual Reports since 1996-97 as required and submitted to the State Government.*
- *The Standing Advisory Committee constituted in May 2000 to ensure better co-ordination and effectiveness in the working of the PCB had not met even once as of April 2001.*

3.1.1 Introduction

The preservation of the quality of air and control of air pollution is governed by the provisions of the Environment (Protection) Act 1986 (EP Act), the Air (Prevention and Control of Pollution) Act, 1981, the Noise Pollution (Regulation and control) Rules 2000 and the Central Motor Vehicles Rules 1989. The management and handling of different categories of wastes are governed by the Hazardous Waste (Management and Handling)

Rules 1989, the Bio-Medical Wastes (Management and Handling) Rules 1998, and the Municipal Solid Wastes (Management and Handling) Rules 2000 notified by the Government of India under the provisions of the EP Act. The main sources of air noise pollution were industries especially Chemical industries, Motor vehicle, Stone crushers and Generators. Industries handling hazardous chemical/substances and hospitals were generating hazardous, bio-medical and solid waste.

3.1.2 Organisational set up

Government department viz. the Science, Technology and Environment (STED), Health and Family Welfare, Forest & Wild Life, Irrigation, Local Self Government, Motor Vehicles and Police and the State Committee on Science, Technology & Environment (STEC) in addition to the Statutory agency of the Kerala State Pollution Control Board (PCB) are involved in the activities for protection of environment. The PCB is responsible for the implementation of the Water/Air Acts and various

Waste Management Rules. The Motor Vehicles Department headed by Transport Commissioner is responsible for the control of smoke emission from motor vehicles. The Police Department is responsible for the enforcement of the provisions of Noise Regulation Rules 2000.

3.1.3 Audit coverage

The performance of the PCB for the period upto 1994095 was commenced in the Report of the Comptroller and Auditor General of India (Civil) for the year ended 31 March 1995. The Public Accounts Committee made (December 2000) several recommendations regarding improvement in coverage of consented industries under Air Act and Hazardous Wastes Rules and monitoring. The implementation of the Environmental Acts/Rules in relation of water pollution for the period 1995-2000 was reviewed and results of the review included in the Report of the Comptroller and Auditor General of India (Civil) for the year ended 31 March 2000. Implementation of the provisions of the Air Act, various Waste Management Rules and the regulations in the Central Motor Vehicles Rules for the period 1996-97 to 2000-2001 was reviewed during September 2000 to March 2001 with reference to the records of the implementing agencies and various departments. The audit findings are discussed below.

3.1.4 Financial Outlay

The details of funds received and spent by the PCB during 1996-2001 were as under:

Year	Receipt				Expenditure met from			
	State Grant		Central Grant	Total	State funds		Central funds	Total
	Plan	Non-plan			Plan	Non-plan		
	(Rupees in crore)							
1996-97	1.75	0.46	0.04	2.25	1.05	1.16	0.17	2.38
1997-98	0.50	0.99	0.43	1.92	1.79	0.88	0.25	2.92
1998-99	1.75	1.44	0.27	3.46	1.83	0.88	0.14	2.85
1999-00	1.75	2.39	0.20	4.34	2.76	1.57	0.28	4.61
2000-01	1.31	2.18	0.20	3.69	2.59	1.67	0.29	4.55
Total	7.06	7.46	1.14	15.66	10.02	6.16	1.13	17.31

The excess expenditure over the receipt was met from the opening cash balance of Rs 4.66 crore available as on 1.4.1996.

3.1.5 Declaration of air pollution control area

Under Section 19 of the Air Act, the State Government is empowered in consultation with the PCB to declare any area within the State as Air Pollution Control area. Under Section 21 of the Act it is a pre-condition for enforcement of the provisions of the Act regarding obtaining of consent of the PCB

before establishing/operating industrial units. Government declared the entire State as Air Pollution Control Area in November 1993.

3.1.6 Policy declarations and co-ordination

The national conservation strategy and policy on environment and development was enunciated in June 1992. State Government prepared a similar draft policy statement in 1994. The Environment Protection Programme Planning Committee constituted (October 1997) by the State Government considered the draft by September 1999 suggested (March 2000) certain additions/modifications to the draft. The final draft was pending with Science, Technology and Environment Department as of March 2001. Thus, the policy conceived by the State Government in 1992/1994 could not be formally adopted even after more than the seven years.

Government of India made a policy statement abatement of pollution as early as March 1992. A similar draft was prepared (1993) by the PCB and forwarded (July 1994) to the State Government. The final draft document was pending with the State Government for seven years (October 2001).

3.1.7 Inadequate coverage of polluting agencies under Air Act

Though there were 2.18 lakh industrial units (18,493 major and medium and 1.99.827 small scale units) registered with the Directorate of Factories and Boilers/Industries Department as of March 2001, the PCB identified only 5250 industrial units (3 percent) (250 large and medium and 5000 small-scale units) as pollution significant under Air Act as on 31 March 2001. Of these 1798 units (190 large and medium and 1608 small-scale units) were brought under consent as of March 2001. Thus, only 34 per cent of the identified industries are presently covered under the surveillance of the PCB. Test check of records in 9 field offices revealed that of the 293 consented units, 13 units were functioning without renewal of consent.

In Thiruvananthapuram district, five private hospitals (Suchitra Hospital at Kilimanoor, Valsala Nursing Home, G. G Hospital, SUT Hospital at Thiruvananthyapuram) and two Government hospitals (Government Hospital at Neyyattinkara and Attingal) did not apply for consent under Water and Air Acts despite public complaints against those units and specific directions issued by the PCB during January 1994 to June 1999. No follow up action was taken by the PCB (May 2001).

3.1.8 Ineffective enforcement of emission standard

The PCB was required to enforce the emission standards prescribed under the Air Act in respect of the consented units through monitoring by collection and analysis of stack samples at prescribed regular intervals. The PCB did not collect and analyse stack samples or ambient air samples at periodical intervals. However, the Environmental Engineers of the District Offices were instructed by the PCB (January – February 2001) to monitor industrial emission and ambient air quality and sound levels at the rate of only one monitoring a year in respect of large and medium industries including all stone crushers.

i) Inadequate monitoring

The details of stack and ambient air monitoring carried out during 1996-2001 were as under:-

Details	
No. of units for which stack monitoring was required to be done	898
No. of industries monitored	116 (13 per cent)
No. of stone crushers to be monitored	900
No. of stone crushers monitored	16 (2 per cent)

The Regional Office, Ernakulam has under it the largest concentration of air polluting industries (639) like FACT, HIL, TCC, of which 59 were chemical industries (11 large, 10 medium and 38 small units). However, there was no stack monitoring since June, 1999 as the Monitoring kit and Gas Analyser which went out of order in June 1999 were not repaired as of March 2001. No stack monitoring was done in Alappuzha as no Stack Monitoring kit was supplied to the District Office. During the period, in Kannur, Kollam and Thrissur districts one each out of 125, 246 and 106 industries respectively was monitored. Even the limited stack monitoring done during November 1996 to March 2000 in respect of 7 major polluting industries in three districts (Ernakulam: 5, Kollam: 1 and Thrissur: 1) disclosed excess concentration of pollutants like Mercury (0.27 – 6.14mg/NM³ as against the standard of 0.2mg/NM³) Sulphur dioxide (862- 1126mg/NM³ as against the standard 400mg/NM³) and Carbon monoxide (200 mg/NM³ as against the standard of 175 mg/NM³). PCB state (may 2000) that they were concentrating on major industries, which had 4 to 20 stacks each with height ranging from 6 to 90 meters. The shortfall in monitoring was attributed by the PCB to the difficulties in carrying the monitoring kit to the top of the stack and shortage of manpower.

a) Surprise checks

Surprise inspections conducted by the PCB at the instance of Central Pollution Control Board (CPCB) (November 1999) during December 1999 – January 2001 in respect of 19 industrial units revealed the following:

(i) Ponmudy Paper Mills, Trivandrum was operating with stack height kept at 11 metres and 6 metres as against the stipulation of 20 metres and 11 metres respectively as per consent condition.

(ii) In McDowell and Co. Ltd., (Brewerie) 2 out of 3 boilers had no stack monitoring facility and concentration of Sulphur Dioxide was in excess of standards.

(iii) Kavanar Latex., Pala (Rubber Industry) was working without Board's consent.

(iv) In Kerala Minerals and Metals Limited (KMML), Chavara stack height of generator was only 6 metres as against 10.5 metres required. There was leakage of chlorine and emission quantity exceeded the limit prescribed in 2 out of 16 stacks during May 1999 to March 2000.

(v) In Merchem Ltd., Edayar emission was not scrubbed before being let out into the atmosphere.

These findings indicated that the Regional/District Offices were not effectively monitoring emission levels and pollution controls system in the industries.

b) Stack monitoring reports of industries

In the absence of regular, periodical stack monitoring, collection of air samples and analysis thereof by the PCB themselves, the PCB depended on Stack Monitoring Reports by the consented units who were required to submit the reports at prescribed intervals. Test-check of records in respect of 25 units in two districts (Kollam and Thrissur) revealed that the number of monthly, quarterly and half yearly monitoring reports received (January 2000 – March 2001) were only 6, 11 and nil as against 15, 130 and 17 respectively due as of March 2001. As such, monitoring of emissions of industries was inadequate. In the absence of proper monitoring, cases exceeding emission standards were not detected and legal provisions against the defaulting units not invoked.

ii) Ambient Air Quality Monitoring

a) National Ambient Air Quality Monitoring (NAAQM) Project was initiated in 1984 by CPCB as a 100 per cent Centrally assisted scheme in order to develop a reliable database for the whole country. Each year 104 samples (2 per week) were to be collected from each monitoring station to be set up and maintained by the PCB. The parameters included were suspended particulate matter (SPM – 8 hourly), Sulphur dioxide (SO₂ – 4 hourly and Oxides of nitrogen (NO_x – 4 hourly). Supporting meteorological data were to be collected from Indian Meteorological Department. As of March 2001 the PCB set up 11 stations in 5 districts as against 13 sanctioned by the CPCB. The shortfall was attributed to difficulty in finding out suitable locations. i) In four districts*, 5200 monitoring were to be done during the 5 years. But number of monitoring actually done was nor done intimated as of October 2001. There was no periodical inspections of the NAAQM stations in the districts from the head office as required under the guidelines of the project. The PCB stated (May 2001) that a surprise inspection of the monitoring station at Thiruvananthapuram was conducted in January 2001. As the report was not available to Audit, the statement was not susceptible to verification.

ii) Though the monitoring reports were to be sent to CPCB monthly, these were not sent regularly and shortfall was to the extent of 6 to 40 per cent as indicated below.

Year	Number of monthly reports due from 4 districts	No. of reports sent	Shortfall	Per cent of shortfall
1996-97	48	29	19	40
1997-98	48	45	3	6
1998-99	48	31	17	35
1999-2000	48	43	5	11
2000-2001	48	41	7	16

Maximum shortfall was noticed in Kozhikode district (19 reports) followed by Kottayam district (15 reports).

iii) CPCB in their inspection reports for the years 1996 and 1998 adversely commented on the poor maintenance of the stations, the non-representative location of one station in Thiruvananthapuram city, lack of training for the field staff in collecting the samples, non-observance of norms in monitoring, non-inclusions of meteorological data, non-maintenance of field data sheet and record of monitoring by the field staff, etc. Inspection report of the CPCB in 1999 reported the defects pointed out in earlier reports as they remained unrectified.

iv) A study conducted by the Indian Institute of Science, Bangalore revealed that NAAQM stations set up at a height of 3.5 metre from the ground level was more than 1.5 metre beyond the normal breathing level of human beings. According to their findings, the data collected by such stations at longer intervals would not indicate the correct level of pollutants in the ambient air samples.

b) Ambient Air Quality Monitoring Project The PCB set up 3 ambient air quality monitoring (AAQM) stations in 3 districts between May 1998 and November 1999. Analysis of ambient air samples in Kerala Minerals and Metals Ltd. station in Kollam district during September 1999 to July 2000 revealed that the concentrations of Sulphur dioxide and Oxides of Nitrogen was in the range of 141 to 460 Mg/NM3 as against the standard of 120 Mg/NM3. Such excess concentration has adverse effect on the respiratory system of human beings. No monitoring was done since August 2000 by the district office, Kollam as the equipment was defective and lying without repair as of March 2001. District Office, Alappuzha did not review data of ambient air quality in Kerala State Drugs and Pharmaceuticals Ltd. stations from June 2000. Thus, this was not monitored. No reason was furnished for the same.

c) High concentration of SPM in Kochi Area

Samples of Suspended Particulate Matter (SPM) indicated high concentration at different stations in Kochi city as shown in the following table:

Sl. No	Name of Station	Period	No. of samples out of	Actual concentration (In Mg/Nm3)	Classification	Standard (In Mg/Nm3)
1	Irumparam	May 1998-Nov. 2000	19/372	531-2326	Industrial	500
2	Eloor	"	8/372	503-1238	Industrial	500
3	Vyttila	"	18/372	530-891	Residential	200
4	Wellington Island	"	36/372	530-1590	Residential	200

In two stations in Kochi, (Travancore Chemicals & Metals and Fact Cochin Division) maintained by the respective industries the concentration of SPM during February – March 2000 was found to be in the range of 62-1058, Mg/NM3 and 272-4423 as against the permissible Level of 500 Mg/NM3. concentration of SPM in excess of prescribed standards revealed inadequacy of pollution control measures in these industries.

3.1.10 Vehicular Pollution

a) Ineffective enforcement

Regulation of vehicular emissions under the Central Motors Vehicles (CMV) Rules came into being in 1989. Enforcement of the provisions was, however, not taken up until the Kerala High Court directive in January 1993. the Motor Vehicles Department acquired 14 gas analysers and 14 smoke meters at a cost of Rs.48.55 lakh and 5 Tempo trucks and 14 Tata Sumo vehicles at a cost of Rs.62.94 lakh during October 1993 to November 1998. these equipments were to be mounted on vehicles for use as mobile units for conducting road checks. Of the 14 Regional Transport Officers (RTO) only 6 RTO's were provided with smoke meters and 8 with gas analysers by November 1998.

Test-check of records in 9 RTOs and information received from the Transport Commissionerate at Thiruvantapuram revealed that 8 out of 9 vehicles were diverted without mounting the equipment for purposes other than road checks. During June 1998 to December 2000 no road checks were conducted in 5 districts and in the remaining 9 districts checking was irregular. Even the cases detected were based on either non- availability of Pollution Under Control Certificate (PUC) or using air horn or emitting excessive smoke etc. and not on the basis of testing emissions with the equipment. Thus, the testing equipment were not used at all in any of the districts though Rs. 51.02 lakh inclusive of a sum of Rs. 2.47 lakh was spent on them.

Under CMV Rules every motor vehicle was required to conform to prescribed emission standards and obtain a valid PUC issued by licensed smoke testing station (Rule 115).

The State Government assured the Hon'ble High Court that the provisions of CMV Rules would be implemented throughout the State by the end of 1996-97 and all RTOs were instructed (May 1996) accordingly. But in June 1999 the Transport Commissioner noted that despite providing all infrastructure facilities no substantial progress was achieved and instructed (December 1999) that all Government vehicles should conform to the emission standards and requirements of PUC. But, compliance of these instructions were not monitored (May 2001).

b) Licensing of Smoke testing Stations

The State Government issued the guidelines for setting up smoke testing stations in August 1993 and in February 1996. as of December 2000, the Department issued license to 117 testing stations in the private sector in the State. It was noticed that there was no prescribed system for regular monitoring of the testing stations by the RTOs.

c) Pollution by KSRTC vehicles.

Kerala State Road Transport Corporation (KSRTC) had a fleet strength of 4473 buses as of December 2000 of which 102 vehicles were more than 12 years old. In November

1999, the Transport Commissioner observed that KSRTC was the main offender on both counts i.e., levels of emission and sound. But the RTO Thiruvanthapuram with whom all the KSRTC vehicles were registered was not supplied with any testing equipment and no monitoring was carried out in respect of the KSRTC vehicles by the Motor Vehicles Department (June 2001).

Thus despite provision of rules for various measures such as PUC Certificate, compounding of offences by levying fine etc., the problem of controlling or preventing vehicular smoke pollution in towns and cities were not addressed.

3.1.11 Ineffective Internal Control

The PCB did not have adequate internal controls to monitor its functioning till September 1997. it Prescribed submission of various reports and returns by the field offices between October 1997 and July 1999. A system of surprise inspection was introduced from December 1999. Implementation of these measures were ineffective.

Test-check of the records of the PCB revealed that there were heavy shortfall in the receipt of the returns as indicated below:

SL No.	Details of returns/Meetings	Period of Test Check	Report/Meetings		Shortfall (per cent)
			Due	Received	
1	Monthly Reports of activities due from 9 field offices	9/98 to 3/2001	270	Nil	100
2	Industry-wise Half yearly progress reports due from 9 field offices	4/98 to 3/2001	54	22	59
3	Quarterly Meetings of officers	10/97 to 3/2001	14	2	86
4	Monthly meetings @ 7 per month in the Head Office	1/99 to 3/2001	189	27	86
5	Surprise checks	12/99 to 1/2001	26	19	27

Inspection notes issued by the Surprise Inspection Team were not replied to by 8 inspected units. No further inspections by the local field offices were conducted to ascertain the extent of compliance required by the inspection squad.

3.1.12 Annual Report

Under the Air Act the PCB was required to prepare an annual report of the activities of the previous financial year and present it to the State Government by 31 July of the succeeding financial year for being presented to the Legislature by 31 December. But the reports for the year 1996-97 to 1999-2000 were not finalized by the PCB as of March

2001. Thus the legislature was not informed of the activities of the PCB. Reports published up to 1995-96 did not include environment status of the relevant years.

3.1.13 Court Cases