

Chapter - 2

Performance Audit

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Performance Audit

Environment, Forest, Science and Technology Department

2.1 Implementation of Environmental Laws and Rules by Andhra Pradesh Pollution Control Board

2.1.1 Introduction

Concern over the declining state of environment has grown all over the world since the sixties. Enactment of Water (Prevention and Control of Pollution) Act-1974 (Water Act), Air (Prevention and Control of Pollution) Act-1981 (Air Act), Environment (Protection) Act-1986 (EP Act), etc. and formulation of various waste management rules has taken place.

In September 1974, GoI constituted the Central Pollution Control Board (CPCB) under the Water Act. CPCB was entrusted with several powers and functions there under and also under the other environmental Acts enacted subsequently. CPCB plays a key role in prevention, control or abatement of pollution in the country. Its functions include advising the Central Government on any matter concerning pollution, issuing guidelines to Pollution Control Boards/Pollution Control Committees of the States/Union Territories and also coordinating their activities.

2.1.2 Role of Andhra Pradesh Pollution Control Board

AP Pollution Control Board (APPCB/Board) is a statutory authority constituted (1976) by GoAP under the powers conferred on it by Section 4 of the Water Act. Initially constituted to implement the provisions of Water Act, the Board was made responsible for implementation of provisions of other environmental Acts enacted subsequently. The environmental laws and rules largely provide the Board a predominant role in monitoring of compliance with the provisions of these laws and rules by industries, municipal authorities, hospitals, etc. The Board is responsible for collection and dissemination of information relating to pollution, planning comprehensive programmes and advising the State Government for prevention, control or abatement of pollution. To enable it to discharge the mandated functions effectively, the Board has been vested with powers to obtain information from the persons in charge of any establishment; inspect and collect samples of effluents/emissions; grant/reject/withdraw consent for establishment/operation of any industry, operation or process; to approach Courts for restraining persons causing pollution; etc.

2.1.3 Financial resources of the Board

As per the Water (Prevention and Control of Pollution) Cess Act, 1977, enacted by Parliament, water cess is to be collected from the state industries and municipalities by the Board and remitted to the Central Government. The

GoI then apportions 80 *per cent* of the collections with the Board. Sources of income of the Board comprised mainly its share of water cess received from GoI. Besides, Board's internal resources like fee collected while granting Consent for establishment/operation (CFE/CFO) and their renewals under Air and Water Acts, sample analysis fees, Bio-Medical Waste Management authorization fee, etc.; and grants received from GoAP, if any also are sources of its finance.

2.1.4 Organizational structure

APPCB is headed by a Chairman nominated by the State Government who is assisted by a full-time Member Secretary. The Board functions through its Head Office located at Hyderabad, five Zonal Offices headed by Joint Chief Environmental Engineers and 19 Regional Offices headed by Environmental Engineers.

2.1.5 Audit Scope

The Performance Audit seeks to evaluate the implementation of the Environmental laws and Rules by the APPCB. Records were scrutinized (December 2013 to July 2014) at Board Office, Hyderabad, all the five Zonal Offices¹ (including their laboratories) and 10 out of the 19 Regional Offices² selected on Random sampling basis. Audit covered the performance of the Board during five year period 2009-14. An entry conference was held in October 2013 with the senior officers of the Board, where in the audit objectives, scope and methodology were discussed. The audit findings were communicated to State Government in August 2014. An exit conference was held in February 2015 with the Principal Secretaries of Environment, Forest and Science and Technology Department and Board officials, wherein the audit findings were discussed. Response of the Government/Boards during exit conference and written replies received (December 2014) from Government have been taken into account while finalizing this report.

2.1.6 Audit Objectives

The objectives of the performance audit are to assess whether:

- Adequate mechanisms have been put in place by the Board for prevention, control and abatement of pollution;
- Monitoring by the Board on the compliance by the stakeholders with the provisions of various environmental laws and rules, was efficient and effective and achieved the desired results;
- Fund management by the Board is efficient to secure optimum utilization; and
- Effective mechanism for Internal Control was in place and functioning effectively.

¹ Hyderabad, Kurnool, RC Puram, Vijayawada, and Visakhapatnam Zonal Offices

² Guntur, Hyderabad, Kakinada, Kurnool, Nalgonda, Sangareddy, Tirupati, Vijayawada, Visakhapatnam and Warangal Regional Offices

2.1.7 Audit criteria

Performance Audit was conducted with reference to the following sources of criteria:

- The Water (Prevention and Control of Pollution) Act-1974;
- The Water (Prevention and Control of Pollution) Cess Act-1977;
- The Air (Prevention and Control of Pollution) Act-1981;
- The Environment (Protection) Act-1986 and various Rules³ made there under;
- General Financial Rules applicable to the Board.

Audit findings

2.1.8 Inadequacy of mechanism for prevention, control and abatement of pollution

2.1.8.1 Annual action plans

Annual Action Plan of any organization defines various activities and sub-activities proposed to be taken up including physical and financial targets to be achieved in the ensuing year in line with the vision and long/short term goals of that organization.

Board did not prepare Annual Action Plans from 2012-13 onwards. Though Action Plans were approved by the Board for the years 2010-11 and 2011-12, achievement against targets was not prepared. Non-preparation of Action Plans indicates lack of proper planning and monitoring of pollution control activities in the Board.

Government replied (December 2014) that Annual Action Plans will be prepared and implemented from 2015-16.

2.1.8.2 Budget and Expenditure

Under Section 38 of the Water Act, the State Board shall, during each financial year, prepare a budget in respect of the ensuing financial year showing the estimated receipt and expenditure. It was noticed that the Board was preparing budget estimates in a manner that reflected wide variance in the budget versus actuals as shown in table 2.1.

Audit observed that utilization of funds by the Board vis-à-vis budget estimates was poor, ranging between 12.87 to 17.10 *per cent* during 2009-14, as shown below, indicating lack of planning and unrealistic preparation of budget estimates:

³ Environment (Protection) Rules-1986, Bio-Medical Waste (Management and Handling) Rules-1998, Noise Pollution (Regulation and Control) Rules-2000, Municipal Solid Waste (Management and Handling) Rules-2000, Hazardous Waste (Management and Handling) Rules-2008, Plastic Waste (Management and Handling) Rules-2011, etc.

Table 2.1 – Actual Expenditure vis-à-vis Budget estimates of the Board during 2009-14

(₹ in crore)

Year	Budget Estimates (BE)	Actual Expenditure (percentage)	Variance (BE minus Actuals)
2009-10	146.11	24.98 (17.10)	121.13
2010-11	214.38	32.31 (15.07)	182.07
2011-12	326.49	42.03 (12.87)	284.46
2012-13	365.81	49.61 (13.56)	316.20
2013-14	382.69	59.86 (15.64)	322.83

(Source: All the information/data mentioned in this report is as per records of the Board, unless mentioned otherwise)

Shortfall in expenditure was mainly due to non-utilization of financial assistance for establishment of Sewage Treatment Plants (discussed in para 2.1.10.1); financial assistance for remediation⁴ of lakes (para 2.1.10.6); non-procurement of laboratory equipment/maintenance (para 2.1.8.3); and due to non-filling up of vacancies (para 2.1.18.1); etc. Further, the Board has been providing large sums in its budget estimates towards construction of new buildings for Zonal/Regional offices, but not been able to utilize the funds due to non availability/procurement of land, non-finalizing designs of buildings and delays in obtaining required building permissions.

Because the Board has not been able to spend even a part of their own incomes in activities they are supposed to undertake every year, large amounts of savings have accumulated over the years as shown in table 2.2:

Table 2.2 – Accumulated income of the Board

(₹ in crore)

Year	Opening Balance	Savings during the year (Excess of Income over Expenditure)	Closing Balance
2009-10	214.23	61.96	276.19
2010-11	276.19	61.83	338.02
2011-12	338.02	62.19	400.21
2012-13	400.21	56.46	456.67
2013-14	456.67	83.34	540.01

Source: Audited accounts of the Board for the years from 2009-10 to 2013-14

Government replied that savings were mainly due to non-utilization of funds provided for construction of new buildings and environmental schemes.

Despite availability of sufficient funds, the Board failed to utilize the resources because of lack of institutional capacity, shortage of manpower, lack of co-operation and coordination with the municipalities and private industries,

⁴ Remediation means ‘abatement, cleanup, or other method to contain or remove a hazardous substance from an environment’

lack of initiative on the part of the organization, etc., which have been dealt with in this report in the succeeding sections.

2.1.8.3 Lack of infrastructure facilities and manpower at zonal laboratories

Under the Water Act and the Air Act, the State Board may establish or recognize laboratories for analyzing water/air samples to enable the Board to perform the functions stipulated in those Acts. Accordingly, the Board established one Central Laboratory at Hyderabad and zonal laboratories in each of the five zones and has been sending reports to CPCB.

Guidelines issued (June 2008) by CPCB for recognition of environmental laboratories under the EP Act by Central Government stipulated certain minimum standards, which included availability of capacity/equipment for conducting certain minimum air/water quality tests and recognition/accreditation by the National Accreditation Board for Testing and Calibration of Laboratories (NABL). Audit observed that:

- (i) Only the Central Laboratory at Hyderabad has NABL accreditation but is currently not recognized under EP Act, as the validity of recognition obtained (2007) by it expired in 2012 and it could not get renewal due to non-obtaining of OHSAS⁵-18001 accreditation as per the revised pre-conditions stipulated (2011) by MoEF. None of the five Zonal Laboratories is recognized under EP Act, as they did not have sufficient manpower and infrastructure necessary to get NABL accreditation and recognition under EP Act.
- (ii) As per CPCB guidelines, every laboratory should have facilities for a minimum of five essential group tests, viz. - physical, inorganic, organic, microbiological and toxicological tests for water analysis. For air analysis, the lab must have facilities for the first four of the above tests. An environmental lab should also provide for biological tests, characterization of hazardous waste and soil/sludge/sediment/solid waste analysis. It was however noticed that four out of the five test checked zonal laboratories did not have the capacity for conducting all the mandatory tests (details in **Appendix-2.1**).
- (iii) None of the five zonal labs had all the minimum equipment required for sample analysis. The labs either did not have some of the mandatory equipment or have non-functional equipment (**Appendix-2.2**).
- (iv) There was also shortage of technical staff in three out of five zonal labs as against the norms prescribed by CPCB, as shown below:

⁵ Occupation Health and Safety Assessment Series

Table 2.3 – Position of technical staff in Zonal laboratories

Zonal lab	Assistance in sampling				Sampling and Analysis				Sampling and Analysis Supervision			
	N	P	C	T	N	P	C	T	N	P	C	T
RC Puram	2	2	0	2	4	1	2	3	3	3	0	3
Warangal	2	0	7	7	4	0	4	4	3	2	0	2
Vijayawada	2	0	4	4	4	1	1	2	3	2	0	2
Visakhapatnam	2	0	3	3	4	0	6	6	3	4	0	4
Kurnool	2	0	3	3	4	0	1	1	3	2	0	2
Total	10	2	17	19	20	2	14	16	15	13	0	13

N: Staff requirement as per norms; P: Permanent employees; C: Contract employees; T: Total employees

It is evident from above table, there was shortage of ‘sampling and analysis’ staff in RC Puram, Vijayawada and Kurnool Zonal Laboratories and shortage of ‘sampling and analysis supervision’ staff in Warangal, Vijayawada and Kurnool Zonal Laboratories. Further, majority of the available staff members were not regular employees but were engaged on temporary contract basis.

In the absence of the required facilities/functional equipment, there was no assurance that the sample analysis was being done as per required standards in these laboratories.

Though the Board has been making provision for laboratory equipment in its budget estimates every year, it did not procure the above mentioned essential lab equipment, for reasons not on record. As regards the vacancies in laboratory staff, the Board initiated (July 2011) proposals for filling up 31 posts of Laboratory Analysts (out of 58 vacancies), proposals for recruitment through AP Public Service Commission. The proposal was approved by Government in June 2013 and the recruitment is yet to take place.

Government replied that efforts were being made to obtain recognition under EP Act for the Zonal laboratories and for procurement of all the necessary equipment to these laboratories and that recruitment of staff was under process.

2.1.9 Deficiencies in monitoring compliance of Environmental Laws and Rules

The Water Act, Air Act and EP Act empowered the State PCBs to take all such measures necessary for prevention, control and abatement of environmental pollution, to take appropriate action for regulation and control of any industry, operation or process and to initiate legal proceedings in the cases of infringement of environmental laws. Under the EP Act, various waste management and handling rules were also framed by GoI requiring the SPCBs to control and abate the pollution emanated by various types of wastes. The power to issue directions includes the power to direct closure of any industry,

operation or process. The above Acts have provision for prosecution and imprisonment of the convicted up to three months to seven years and/or a penalty ranging from ₹10,000 to ₹1,00,000 for violation of provisions of environmental laws and non-compliance with directions of the Board.

Audit observations on functioning of the Board in relation to prevention, control and abatement of main types of pollution are discussed below.

2.1.10 Water Pollution

The Water Act empowers the Board to make any order for the prevention, control or abatement of discharge of waste into streams or wells and requiring any person concerned to construct new systems for the disposal of sewage and trade effluents or to modify, alter or extend any such existing system or to adopt such remedial measures as are necessary to prevent, control or abate water pollution.

2.1.10.1 Lack of sewage treatment facilities in municipal bodies

Sewage emanating from populated areas is one of the major sources of water pollution. Local bodies have to ensure that the sewage emanating from their jurisdictional areas are not released untreated and are responsible for management of sewage under their jurisdiction.

Audit observed in the 10 test checked Regions that no Sewage Treatment Plant (STP) was constructed in 86 out of 87 Municipalities and in 4 out of 12 Municipal Corporations.

As per the information available with the Board, the Municipalities/Municipal Corporations in these Regions generate a total sewage of 1531 million litres per day (MLD) out of which only 486 MLD of sewage (i.e. 32 *per cent*) was being treated and the remaining 1045 MLD of untreated sewage was being discharged into rivers/streams/lakes/open lands, thereby causing pollution. The percentage of sewage treatment was very low in Municipalities as only 5 MLD (1.05 *per cent*) out of 475 MLD of sewage generated was being treated. In Municipal Corporations, 481 MLD (45.55 *per cent*) out of 1056 MLD was being treated.

Though the Board has been making provision in its annual budget estimates towards financial assistance to municipal bodies for construction of new STPs, the amounts were not utilized as the municipal bodies are not coming forward with proposals for STPs. Board also failed to impress upon the municipalities the need for this. Section 17 of EP Act provides that “where an offence is committed by any Department of Government, the Head of that Department shall be deemed to be guilty of the offence and is liable to be punished.” The Board has been issuing notices to these municipal bodies occasionally and no penal or legal action was taken. There was also no evidence from the records made available to audit that the Board had at any time analyzed the reasons for non-construction of STPs by the municipal bodies and advised the Government on remedial measures in the matter.

Government replied that the Board addressed (October 2014) the Commissioner and Director of Municipal Administration to furnish an action plan for establishment of STPs in municipalities.

2.1.10.2 Lack of Treatment of sewage by Health Care Establishments

The Board took a decision (August 2012) that Health Care Establishments (HCEs) i.e. Hospitals and similar establishments which are having 100 beds and more and are not connected to any terminal facilities, should establish individual STPs for treatment of the sewage.

Audit observed that, 116 out of 213 HCEs in the test checked regions were neither connected to terminal facilities nor had installed individual STPs and were discharging the untreated sewage into municipal drains. Board had only been issuing notices to the HCEs and no penal action as per Act was initiated against defaulting HCEs.

Government replied that the Board was initiating action against the HCEs for not having sewage treatment facilities.

2.1.10.3 Sewage treatment by slaughter houses

In the 10 test checked Regions, 69 out of the 73 slaughter houses are operating without any sewage treatment plants/facilities and discharging sewage into municipal drains/nearby water bodies/lands, causing water and air pollution and increasing the risk of public health hazard. Many of them are municipal slaughter houses. Further, there were no arrangements for safe disposal of solid waste generated in the slaughter houses.

Though the Board has power to issue directions under the provisions of Water Act to violators of environmental laws including the power to direct closure of any industry, operation or process, it did not issue any directions to these slaughter houses.

Government replied that the Board was initiating action against the slaughter houses operating without sewage treatment facilities.

2.1.10.4 Pollution caused by tanneries⁶ near Warangal

Audit noticed that 13 tanneries were operating in the vicinity of Sai Cheruvu located near Warangal with no/inadequate/inoperational effluent treatment facilities. As per Board's records, the Common Effluent Treatment Plant (CETP) supposed to be operated by the tanneries was non-functional most of the time.

- Two tanneries⁷ were functioning without obtaining Consent for Operation (CFO) from the Board since their establishment (November 1985 and March 1993) and two tanneries were allowed to operate despite non-renewal of CFO.

⁶ Leather processing industries

⁷ located at Enamamula village

- Though tanneries fall under highest polluting Red category which were to be inspected annually for compliance with pollution control laws, required number of inspections were not conducted by the Board.
- Despite having knowledge of the pollution caused by the tanneries, the Board did not analyze the effluent samples at regular intervals. Samples were collected/analyzed only during inspections.
- The Board issued closure orders (September 2009) to seven tanneries which were found to be serious violators of pollution control norms, it later temporarily revoked (April 2010 and February 2011) the closure orders in respect of three tanneries on the grounds of partial compliance of Board's directions. While one tannery was operating beyond expiry of temporary revocation orders, periodical extensions of revocation orders were being granted to two tanneries.

The annual averages of Biochemical Oxygen Demand (BOD) and Total Dissolved Solids (TDS) found in the sample analysis in Sai Cheruvu for 2013 were 120 mg/l and 15240 mg/l against the standard of 2 to 3 mg/l and 2100 mg/l (maximum) respectively, indicating that the lake water was of lower standard than the lowest Class-E and unfit for even irrigation/industrial use.

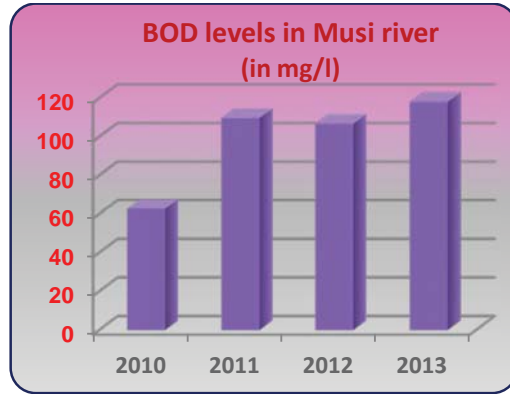
Government replied that all the tanneries have now obtained CFOs and have become members of the CETP, but the CETP was non-functional since long time. It was further replied that notices were issued (August 2014) to the CETP for submission of proposals/cost estimates for its upgradation considering the total effluents generated by all tanneries in that area and on receipt of upgradation proposals, the Board might consider providing financial support to the CETP.

2.1.10.5 Polluted River Stretches

Based on past data of water quality monitoring stations, CPCB identified (2010) nine polluted river stretches in the State (based on the water quality data from 2002 to 2008). Out of these, CPCB assigned top priority to two - viz. River Musi and Nakkavagu⁸ which were found to be very highly polluted. The average BOD recorded in these river stretches was 34mg/l and 50mg/l, respectively.

Audit noticed that, even after more than four years, no action plan was prepared by State Board for restoration of water quality in these river stretches. It was also noticed that the average BOD in river Musi (at Nagole monitoring station) increased from 62.7 mg/l in 2010 to 118 mg/l in 2013 as depicted below:

⁸ Musi: Monitoring locations at Nagole, Rangareddy and at downstream of Hyderabad and Nakkavagu: Monitoring location at Bachugudem, Medak



Government replied that sewage was still flowing into Musi river despite construction of STPs/facilities for diversion of sewage by the Hyderabad Metropolitan Water Supply and Sewerage Board (HMWSSB) and further action was to be taken by HMWSSB only. As regards Nakkavagu, it was replied that despite steps taken by the Board to control industrial/CETP discharges, lot of sewage is generated and flowing into Nakkavagu due to increased residential colonies in the area and that action has to be taken by the respective municipal bodies by constructing STPs and the Board advised the bodies in this regard. However, the reply is silent as to why envisaged directions under the provisions of Water Act were not issued to the respective authorities.

2.1.10.6 Lakes/Tanks polluted by industries in Medak district

Based on the priority of pollution of six lakes/tanks⁹ near the Patancheru-Bollaram industrial cluster area of Medak District which were being polluted by industrial discharge/effluents of industries¹⁰, Board got a study conducted on Asanikunta and Khazipally tanks. The study report (March 2006) showed high level of industrial contamination in these tanks and suggested remediation proposals at a cost of ₹10 crore (2006). However, Board accorded administrative sanction for remediation works only in May 2010. It was also observed that in a meeting held (January 2010) by the Zonal Office, RC Puram, the industry representatives of Bollaram Industrial Development Area (IDA) and Kazipally IDA agreed to bear 25 per cent of remediation cost. However, the contract was not awarded till date for reasons not on record.

In respect of the remaining polluted tanks, Board did not take any action.

It was further noticed that the Board has been providing ₹10 - ₹30 crore in every year's budget estimates (2009-10 to 2012-13) for remediation of polluted lakes, but no expenditure was incurred.

Government replied that most of the illegal discharges from Bollaram into Asanikunta were controlled by the Board, the tank was still receiving sewage from nearby houses for which an STP is necessary and that Khazipally lake

⁹ Khazipally lake, Nakkavagu at Bachugudem, Isnapur tank, Asanikunta lake, Kistareddypet tank and Gandigudem tank

¹⁰ Mainly pharmaceutical and chemical industries

was mostly dry. It was also replied that Board proposed to take up study for remediation of Asanikunta and Kazipally tanks.

Due to inordinate delay in taking up remediation works, the health hazard to the common public in the nearby areas of these lakes/tanks continues to exist.

2.1.10.7 Industries, Municipalities, Healthcare establishments, etc. operating without consent from the Board

As per Section 25 of the Water Act, no person shall, without the previous consent of the State Board, establish or take any steps to establish any industry, operation or process, or any treatment and disposal system or an extension or addition thereto, which is likely to discharge sewage or trade effluent into a stream/well/sewer/land. Similar provision was also contained in the Air Act in respect of persons likely to discharge effluents into the air. Under these Acts, the Board was empowered to issue consent for establishment (CFE) and consent for operation (CFO). Before expiry of CFOs granted initially, the units are required to renew their CFOs. In the test checked Regions:

(i) It was noticed that 2892 (51.86 *per cent*) out of 5576 industries were operating though the validity of their CFOs issued by the Board had expired and were not renewed. Reasons for non-renewal of CFOs were delayed submission of renewal applications, furnishing incomplete information by industries and non-submission of information sought by the Board, non-fulfillment of conditions stipulated in earlier CFOs, etc. Board did not take any penal action in respect of such cases.

Audit noticed in test check of 200 cases, 74 cases of delay (ranging up to 11 years) in submission of renewal applications by industries. In 44 cases, there were delays (ranging up to 31 months) in granting renewal by the Board beyond 120 days stipulated in the Water Act.

(ii) As per Water Act, every Municipality/Municipal Corporation discharging sewage needs to obtain CFO from the Board. It was observed that only one¹¹ out of 12 Municipal Corporations and none of the 87 Municipalities obtained CFO.

(iii) As per Board's decision (August 2012), every HCE having 25 beds or more is required to obtain CFO under Water Act. However, 727 (82 *per cent*) out of 885 such HCEs did not obtain CFOs from the Board.

(iv) Out of 73 slaughter houses, 57 were operating without obtaining CFOs from Board and 13 were operating despite expiry of CFOs.

Board was only issuing notices to the above establishments from time to time drawing the attention to the penal provisions of the Environmental Acts, but did not take action under the provisions.

¹¹ Greater Hyderabad Municipal Corporation, Hyderabad

2.1.10.8 Inadequate inspections of industries

As per instructions issued in the Notification (December 1999) by Ministry of Environment and Forest, GoI, industries shall be inspected at the following frequency depending on their classification viz., Red (highly polluting), Orange (moderately polluting) and Green (least polluting):

Table 2.4 – Prescribed frequency of inspections of industries by Board

S. No.	Size of Industry	Category of Industry	Frequency of visit and effluent sampling
1.	Small scale	Red	Once in 12 months
		Orange	Once in 3 years
		Green	Once in 3 years on random check basis
2.	Large & Medium scale	Red	Once in 3 months
		Orange	Once in 6 months
		Green	Once in 12 months

The instructions also included an advice that State Pollution Control Boards may chalk out a programme of inspection/sampling by its staff so as to cover all the units for vigilance and monitoring purposes and also to improve the frequency as might be necessary.

Audit noticed that the Board's inventory did not have information on the number of small, medium and large industries under each category, in the absence of which Audit could not make an accurate assessment of the number of inspections due, conducted and shortfall thereto. Even if the minimum periodicity (once in a year) of inspections is considered, there was substantial shortfall of 69 *per cent* in inspections of Red category industries in test checked Regions (details in *Appendix-2.3*).

It was also observed that Board was inspecting the industries only at the time of renewal of CFO or on receipt of specific complaints.

Government replied that inspections were prioritized due to inadequate staff and that action for recruitment of staff had been initiated.

2.1.10.9 Toxicity evaluation of the industrial effluents in coast-based industries in Visakhapatnam District

As per the study report submitted by the Andhra University to the Board in 2011, the treated effluents of three out of ten industries/operators were found to be highly toxic, causing mortality of test organisms ranging between 43.3 and 100 *per cent*, which was far higher than the prescribed maximum of 10 *per cent*.

The Board did not take any action to ensure that these industries comply with the effluent discharge standards stipulated in EP Rules. In fact, the Board neither conducted Bio-assay tests thereafter nor insisted upon submission of periodical Bio-assay test reports by these industries, though conducting of periodical Bio-assay tests was one of the conditions stipulated while granting CFO to these industries.

2.1.10.10 Flouting of water quality norms by parboiled rice mills

In four¹² test checked Regional Offices, it was noticed that 137 parboiled rice mills were operating without obtaining CFO from the Board and 118 mills were operating with expired CFOs.

36 out of the 333 Parboiled Rice Mills did not have effluent treatment facilities and 192 mills did not install the mandatory water meters to assess the actual water consumption by these rice mills which has a direct linkage to the sewage generated by them.

The effluent sample analysis results show that the parameters are very high. For example, out of 17 sample analysis reports test checked in Nalgonda Region, the BOD recorded in four cases ranged from 228 mg/l to 2263 mg/l (norm: 100 mg/l maximum) and TDS recorded in five cases ranged from 2350 mg/l to 6690 mg/l (norm: 2100 mg/l maximum).

Further, emission of particulate matter (rice husk which is a by-product of the process) was also causing air pollution. For example, out of 24 air sample analysis reports test checked in Nalgonda Region, Respirable Suspended Particulate Matter was found to be high in 11 cases ranging from 110 $\mu\text{g}/\text{M}^3$ to 413 $\mu\text{g}/\text{M}^3$ (norm: 100 $\mu\text{g}/\text{M}^3$).

The Board had been issuing notices and directions time and again to these industries. However, the Board failed to initiate any legal action as provided in the Water Act, against them for continued violations.

Government replied that the Board is issuing CFOs only to those parboiled rice mills that have provided ETPs and air pollution control equipment and that action is being taken to bring all the parboiled rice mills under consent management and for closure of non-complying mills.

2.1.10.11 Unabated contamination of water bodies due to sewage/effluents influx

(i) **Tungabhadra river:** Board identified (2010-11) nine sewage outfalls spread over a stretch of four kilometers in Kurnool town that discharged sewage into the river causing pollution. It should have issued directions to the municipality to construct an STP and to connect the nine sewage outfalls to STP through an interception sewer.

Board issued a show cause notice (January 2013) to the municipality, but has not issued directions under the provisions of Water Act. No STP was established by the Municipal Corporation (as of July 2014) and the River Tungabhadra continues to be polluted by the sewage of the Kurnool Town.

As per the latest survey report (January 2014) of the Board, six major drains were discharging untreated sewage of 4443.2 Cum per hour into Tungabhadra. At this rate, the total untreated sewage discharge works out to 106.6 million litres per day (MLD) endangering public health and environment.

¹² This issue was examined in Vijayawada, Nalgonda, Kakinada and Guntur ROs only

(ii) **Srisailam Reservoir:** The PCB team submitted (23 September 2012) its inspection report on Srisailam Reservoir with recommendations to the Board, inter alia, that to avert repetition of the phenomenon of sewage/algae, the effluents (estimated at 8 to 10 lakh gallons per day) which are being discharged into the reservoir have to be diverted and treated before letting them out into the reservoir and usage of plastic should be strictly banned in the entire area of Srisailam. It was also stated in their report that the Srisailam Devasthanam was preparing a master plan for entire Srisailam area including a provision for construction of STP also. Audit however observed that none of the above mentioned remedial measures have been taken up so far (July 2014) and the Board did not issue any direction to Srisailam Devasthanam in this regard.

2.1.10.12 Inaction on pesticide/metal residues in Kolleru Lake

Kolleru lake is India's largest fresh water lake and a Bird Sanctuary, spread over two districts¹³ of AP. As per a study report (January 2010) prepared by a private agency on behalf of APPCB, there are 14 pesticides (Organochlorine and Carbamates) and 15 heavy metals present in Kolleru lake water. Some of the pesticides detected (Phosphamidon/Organophosphorous, Atrazine, Carbofuran, etc.) are highly toxic to mammals, fish and other wildlife and can cause health and environmental problems in future. Despite the adverse findings in the study report, the Board neither formulated any action plan to improve the water quality nor monitored the level of pesticides in this important lake/Bird Sanctuary thereafter.

2.1.11 Air Pollution

Air pollution occurs due to increase in the concentration of foreign particles like Respirable Suspended Particulate Matter (RSPM), Sulphur Dioxide (SO₂), Nitrogen Dioxide (NO₂), Carbon Monoxide (CO), Lead, Ozone depleting substances, etc. which are harmful to living organisms. Increased air pollution adversely affects human health by causing respiratory diseases like asthma, bronchitis, etc.

2.1.11.1 Inadequate monitoring of air quality

The Board monitored air quality in 74 monitoring stations across the State. Though CPCB prescribed (April 2011) a list of important air quality parameters to be analyzed by monitoring laboratories, the State Board did so for TSPM, RSPM of size PM₁₀, SO₂, NO/NO₂, etc, but none of its Zonal laboratories were monitoring the parameters like fine particulates PM_{2.5}, Benzo(a) Pyrene (BaP), Lead, Nickel, Ozone (O₃) and Benzene, as they did not have the required lab equipment (discussed in para 2.1.8.3).

In 53 out of 74 stations, the annual average RSPM levels were more than the maximum limit of 60 µg/m³ as per the National Ambient Air Quality (NAAQ) standards prescribed by CPCB. The Board neither conducted any studies

¹³ West Godavari and Krishna Districts

(except in Hyderabad) to identify the causes for air pollution nor prepared any action plan to mitigate pollution levels.

Government replied that action in respect of other cities was under proposal.

2.1.11.2 Air Pollution control measures in Hyderabad

During November 2005 to November 2006, the Board conducted a source apportionment study on air pollution in the city of Hyderabad. The study showed that 51 *per cent* of pollution is caused by sources like Coal, Bio-mass burning, Road dust, etc., but no action plan for addressing these sources of air pollution was devised by Board. The study report did not contain any data related to GHG emissions. The Board was also not monitoring GHG emissions, CO₂ and CH₄ on the ground that their monitoring was not mandatory. Though the Board stated that it had acquired competency in source apportionment studies, similar studies were not conducted in any other Zonal/Regional Monitoring stations, despite the fact RSPM levels in many stations were higher than prescribed standards.

Government replied that the issue of other sources of air pollution pertains to Greater Hyderabad Municipal Corporation (GHMC). The reply was silent on the efforts made by the Board to coordinate with GHMC to prepare and implement an action plan on the other sources of air pollution. Regarding monitoring GHG emissions, it was replied that the Board did not have necessary facilities.

2.1.11.3 Utilization of Fly Ash generated by thermal power stations

With an objective of minimizing environmental pollution caused due to fly ash, MoEF, GoI issued (September 1999) a notification under EP Act making it mandatory to utilize fly ash in the manufacture of building materials and construction activities within 100 Km radius of the thermal power plants. As 100 *per cent* utilization was not achieved within the stipulated due date (August 2007), MoEF issued amended notification¹⁴ in November 2009, which *inter alia* stipulated that all the existing coal/lignite based thermal power stations/expansion units shall ensure utilization of fly ash generated by them as per the target dates¹⁵ stipulated in the notification.

However, it was noticed that three public sector thermal power stations did not achieve the targets of fly ash utilization fixed by GoI, as shown below:

¹⁴ Notification no. S.O. 2804(E) dated 3 November 2009

¹⁵ 50% utilization by November 2010, 60% by November 2011, 75% by November 2012, 90% by November 2013 and 100% by November 2014

Table 2.5 – Percentage of utilization of fly ash generated by thermal power stations

Name of the Thermal Power Station	Year and the percentage achieved			
	2010-11 (Target:50%)	2011-12 (Target:60%)	2012-13 (Target:75%)	2013-14 (Target:90%)
M/s Kakatiya Thermal Power Project, Bhoopalapally (M), Warangal (KTPP)	10.14	25.18	33.49	46.35
M/s Dr. Narla Tatarao Thermal Power Station, Vijayawada	60.38	59.94	71.13	71.83
M/s Simhadri Super Thermal Power Project, NTPC, Vishakapatnam	60.04	60.01	60.78	41.81

As seen from above table, two out of the three power stations achieved targets in the years 2010-11 and 2011-12, while none of them achieved the target in 2012-13 and 2013-14.

Further, every year, lakhs of tonnes of fly ash remained unutilized in these thermal power stations. For example, the total quantity of unutilized fly ash in NTPPS, Vijayawada in the last 15 years works out to a huge 2.51 crore MT. Such unutilized fly ash was required to be disposed off safely without causing environmental pollution. It was observed that the Board's inspection reports on these power stations did not contain the details of quantity of fly ash disposed off (other than utilized) every year, method of disposal, storage capacity available in these plants and the balance quantity of accumulated fly ash stored at end of each year.

In respect of M/s KTPP, Government replied that the power station was unable to achieve targets as it was located far away from cement industries and there was no highway construction in nearby areas. It was also replied that M/s KTPP was considering measures like, research on utilization of fly ash for mine stowing, providing input subsidy for transportation of fly ash, etc. to achieve targets.

2.1.11.4 Unabated air pollution by Stone Crushers

There is no effective monitoring by the Board on compliance of the standards by stone crushers in the State. It was noticed that out of a total of 766 stone crushers in the test checked Regions, 599 (78 per cent) were operating without valid CFOs. Of these, 54 crushers did not obtain CFE and CFO from the Board, 294 crushers (established during 1993 to 2011) obtained only CFE and did not obtain CFO till date and 251 crushers were operating without renewing their expired (during 1998 to 2014) CFOs. Board was not conducting regular inspections of crushers. Inspections were being conducted on receipt of public complaints or at the time of renewal of the CFO.

As per CPCB's standards, the level of Suspended Particulate Matter (SPM) near the stone crushing units/equipment shall not exceed 600 micrograms (μ) per cubic meter. Results of air sample analysis conducted by the Board in 50 stone crushers showed alarming SPM levels with ranges as shown below:

Table 2.6 – Ranges of SPM levels found in air analysis reports in stone crushers

Ranges of SPM (standard : 600 $\mu\text{g}/\text{m}^3$ maximum)	No. of samples in the range
601 – 1000	7
1001 – 2000	20
2001 – 4000	1
4001 – 6000	1
> 6001	1
Total	30

The Board has been issuing notices/directions to defaulting units, but did not take any legal action under environmental Acts/Rules.

Government replied that the Board would identify and take action on the stone crushers operating without CFO/not complying.

2.1.12 Management of E-wastes

E-waste consists of all waste from electronic and electrical appliances¹⁶ which have reached their end-of-life period or are no longer fit for their original intended use and are destined for recovery, recycling or disposal. E-wastes contain toxic substances¹⁷ many of which cause cancer.

There are 10 States that contribute to 70 per cent of the total e-waste in India, while 65 cities generate more than 60 per cent of the total e-waste. AP ranks third among the largest e-waste generating States in the country and Hyderabad city ranks 7th among all cities.

In AP, inventorization of e-waste in three cities (Hyderabad, Vijayawada and Visakhapatnam) was done by the Environment Protection Training and Research Institute (EPTRI) in October 2011, at the instance of Board. The report estimated that these cities generate 4268.42 MT of e-waste per annum. The study covered only cell phones, televisions, computers and printers. The quantum of e-waste would be much more if other electrical/electronic wastes are also considered. Further, no such studies were conducted in other cities/towns.

¹⁶ It includes computer and its accessories, monitors, printers, keyboards, central processing units; typewriters, mobile phones and chargers, remotes, compact discs, headphones, batteries, LCD/ Plasma TVs, air conditioners, refrigerators and other household appliances

¹⁷ such as cadmium and lead in the circuit boards; lead oxide and cadmium in cathode ray tube (CRT) monitors; mercury in switches and flat screen monitors; cadmium in computer batteries; polychlorinated biphenyls in older capacitors and transformers; and brominated flame retardants on printed circuit boards, plastic casings, cables and PVC cable insulation that releases highly toxic dioxins and furans when burned to retrieve copper from the wires

As per information furnished by Board, there are only two registered e-waste recycling units (both in Ranga Reddy District) and four registered collection centers in the State. As per Board's data, these agencies collected and processed 493.11 MT of e-waste in 2012-13 which was less than 12 *per cent* of the total e-waste generated in three major cities.

Thus, only a marginal portion of e-waste is being handled by authorized recyclers and there was no monitoring on collection and disposal of remaining e-waste generated in the State. No action plan was prepared by the Board to watch over management of e-waste.

Government replied that out of the seven e-waste recycling/dismantling facilities that had obtained CFE from Board, only two were in operation and five were yet to start operations. It was also replied that Board issued notices/instruction to producers of electrical and electronic equipments for setting up e-waste collection centers in the State in line with the principle of 'Extended Producer Responsibility'. The reply was silent on the progress in the matter and also on lack of action plans and monitoring of e-waste handling in the State.

2.1.13 Management of Hazardous Wastes

As per Rule 22 of Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules-2008, the occupiers generating hazardous wastes and the operators of the facilities involved in disposal of hazardous wastes are required to furnish an annual return to State Board showing the details of hazardous wastes generated by them and disposal thereof. Based on the returns filed by the occupiers/operators, the Board shall prepare an inventory of hazardous wastes within its jurisdiction and compile related information like their recycling, treatment and disposal.

It was observed that the last inventory was done in 2010, which became obsolete due to addition/expansion of industries. As per the Board's records, the Red category (high pollution) industries increased from 2068 in 2009-10 to 3070 in 2013-14, i.e. an increase of 48 *per cent*. The updated position of actual generation of hazardous waste in the State is not known as the Board did not update/compile the inventory using the annual returns furnished by the occupiers/operators. The Board was showing the same quantum of hazardous waste generated in 2010 (10.87 lakh MT) in the subsequent years also.

There are only two authorized Treatment, Storage and Disposal Facilities (TSDFs) in the State (Dundigal in Ranga Reddy District and Visakhapatnam). As per the information furnished by the Board, the quantum of hazardous waste treated/disposed in the last five years was as follows:

Table 2.7 – Details of hazardous waste treated/disposed off during 2009-14

Year	Disposed in MT	Incinerated in MT	Recycled in MT	Total disposed in MT	Percentage of disposal (w.r.to 10.87 lakh MT of waste generated in 2010)
2009-10	1,38,144	8,494	1,96,298	3,42,936	31.55
2010-11	1,07,571	7,741	1,96,298	3,11,610	28.67
2011-12	1,81,403	18,592	1,96,298	3,96,293	36.46
2012-13	1,89,697	4,021	1,96,298	3,90,016	35.88
2013-14 (up to November 2013)	1,22,104	2,842	1,96,298	3,21,244	Not worked out, as full year's details are not available

Even if the quantum of hazardous waste generated in 2010 is taken as a base, the percentage of actual disposed waste would range from 28.67 to 36.46 *per cent* only during 2009-13 and the Board was silent about the balance quantity of hazardous waste.

Government replied that latest inventorization of hazardous waste has now been done. However, the details/results thereof were not stated. It was further replied that Board has been encouraging co-incineration of hazardous waste in cement kilns and about 62000 tonnes of waste was co-incinerated in 2013-14. No reply was furnished regarding action taken on the balance hazardous waste remaining untreated.

2.1.14 Management of Plastic Wastes

As per the Plastic Waste (Management and Handling) Rules-2011, the concerned municipal authorities are responsible for ensuring safe collection, storage, segregation, transportation, processing and disposal of plastic waste. As per Board's estimate (2012-13), the total plastic waste generation in the State was 575 tonnes per day (TPD) (estimated at five *per cent* of the 11500 TPD of the total municipal solid waste generation). Audit noticed that the Board did not have the actual information regarding generation, segregation, collection, disposal and recycling of plastic in the State. Board replied that municipalities did not furnish the information despite notices issued by it. It was also replied that none of the Municipal authorities were complying with this responsibility of collecting and segregating the plastic waste and a notice was issued to all.

As per data available with Board, out of the 294 plastic manufactures/recyclers in the State, 217 units were operating without obtaining registration from Board. No follow up action was taken by Board in the matter.

Thus, there has been ineffective monitoring by the Board on implementation of Plastic Waste Rules in the State.

Government replied that the Board would pursue with Municipal Administration Department for effective implementation of Plastic Waste Rules.

2.1.15 Handling of Municipal Solid Wastes

As per Municipal Solid Waste (Management and Handling) Rules-2000 (MSW Rules) every municipal authority is responsible for the implementation of the provisions of these rules and for any infrastructure development for collection, storage, segregation, transportation, processing and disposal of municipal solid wastes within its territory. The State Board is responsible for monitoring implementation of these Rules.

2.1.15.1 Non-obtaining of authorization by municipal bodies

Rules stipulated that municipal authority or an operator of a facility shall obtain authorization from the Board for setting up waste processing and disposal facility including landfills and comply with the following implementation schedule:

Table 2.8 – Implementation schedule stipulated in MSW Rules

Compliance Criteria	Schedule
Setting up of waste processing and disposal facilities	By 31.12.2003 or earlier
Monitoring the performance of waste processing and disposal facilities	Once in six months
Improvement of existing landfill sites as per provisions of these rules	By 31.12.2001 or earlier
Identification of landfill sites for future use and making site (s) ready for operation	By 31.12.2002 or earlier

It was observed that even after passage of more than 13 years since the Rules were made, 8 out of 12 Municipal Corporations and 81 out of 87 Municipalities in the test checked regions did not obtain authorization from the Board.

Only four (one Municipal Corporation and three Municipalities¹⁸) out of 99 Urban Local Bodies (ULBs) have waste treatment facility and none of them have scientific landfill facilities.

MSW Rules provide that the biodegradable wastes shall be processed through biological processes like composting, vermin-composting, etc. and non-biodegradable wastes which cannot be recycled shall be disposed off through landfills.

However, there is a wide gap between the total MSW generated in the State and MSW treated/disposed off during 2009-13, as shown below:

¹⁸ Kadapa Municipal Corporation and Suryapet, Palamaner and Madanapalle Municipalities

Table 2.9 – Status of disposal of municipal solid wastes in the State during 2009-13**(In MT per Day)**

Year	Estimated MSW generation	MSW segregated (% to total generated)	MSW processed/ treated (% to total generated)	MSW disposed through landfills
2009-10	11500	920	1595 (13.87)	NIL
2010-11	11500	920	1595 (13.87)	NIL
2011-12	11500	920	3658 (31.81)	NIL
2012-13	13358	1069	4392 (32.88)	750
Total	47858	3829 (i.e. 8%)	11240 (23.49)	750

As seen from the above table, only 23 *per cent* of the total MSW was processed whereas only eight *per cent* of the total MSW was segregated into biodegradable and non-biodegradable wastes. Though final disposal of MSW needs to be done through landfills, such disposal was nil during 2009-12 and negligible (750 MTD) in 2012-13. The remaining waste was being dumped in open dumpsites/yards.

Considering the figures of 2012-13, a total of 8216 MT of untreated MSW was being dumped in the open every day, which works out to a huge quantity of 29.99 lakh MT of municipal wastes pile up every year causing environmental degradation and health hazards.

Though the GoAP had directed (2008) all the municipal bodies to apply for MSW authorization, to quantify and characterize MSW and to submit action plan, the municipal bodies did not comply with this so far. A meeting held by Commissioner and Director of Municipal Administration with the municipalities and Board officials, did not yield any positive results so far. Government replied that municipal bodies failed to comply with the provisions of MSW Rules despite pursuance by Government and Board.

Thus, the Government/Board failed to impress upon the municipalities to comply with MSW Rules and also did not analyse the reasons for non-compliance and failed to take necessary remedial measures.

2.1.15.2 Incomplete MSW Demonstration Project at Suryapet Municipality

MoEF and CPCB instituted a scheme for setting up of demonstration projects in solid waste management, with an objective of demonstrating implementation of MSW Rules in an integrated manner. The scheme was to be implemented on cost sharing basis (50:50 ratio between the local body concerned and CPCB). Under this scheme, one project, i.e. ‘Setting up of Model facilities for demonstration of management of MSWs in Suryapet Municipality’, was taken up in AP at a cost of ₹2.9 crore and an MoU was concluded between CPCB, APPCB and Suryapet Municipality. The project was to be completed by September 2007.

Since this was a pilot project, its success was to set an example for other urban local bodies to emulate. However, the project was not implemented fully. The project stagnated since April 2008 onwards and was finally closed (September 2013) after incurring an expenditure of ₹1.13 crore (funded by the Municipality and the CPCB at 50:50 ratio). Providing of sanitary landfill facility, which accounted for about half of the project cost, was not developed by the Municipality. Thus, the intention in setting up of pilot project was not fulfilled. No new projects were taken up in any city in the State.

2.1.15.3 High pollution levels in air and ground water near MSW dump sites

The MSW Rules stipulated that both water and ambient air quality in and around landfill sites needs to be monitored to ensure that the ground water and ambient air quality is not contaminated beyond acceptable limit.

It was observed that three out of 10 sampled Regional Offices (ROs) were not monitoring air and ground water quality in and around the dump yards/sites. Four ROs were monitoring only ground water quality and not the air quality. The reasons stated are shown below :

Table 2.10 – Regional Offices not monitoring the water/air quality near MSW dump sites

Regional Office	Whether air quality monitored	Whether water quality monitored	Reasons stated for non compliance
Hyderabad	No	No	There are no notified dump sites.
Nalgonda	No	Yes	No reasons stated.
Guntur	No	Yes	Due to lack of power supply at dump site.
Kurnool	No	No	Non availability of required equipments.
Tirupati	No	No	Non-availability of equipments.
Vijayawada	No	Yes	Not availability of power at dumpsite.
Vishakhapatnam	No	Yes	No reasons stated.

A test check of 81 ground water analysis reports near the MSW dumpsites revealed high levels of total dissolved solids (TDS) in 70 cases ranging from 501 mg/l to 40872 mg/l (standards prescribed in MSW Rules: 500 mg/l) and Chlorides in 51 cases ranging from 265 mg/l to 19143 mg/l (standard: 250 mg/l).

Government replied that it proposes to take up studies on water and air quality near MSW dumpsites in the coming year. Reply was silent on action taken on high water pollution levels found near MSW dumpsites.

2.1.16 Management of Bio-Medical Wastes (BMW)

As per the Bio-Medical Waste (Management and Handling) Rules-1998, it is the duty of every occupier of an institution¹⁹ generating bio-medical waste to take all steps to ensure that such waste is handled without any adverse effect to human health and environment.

2.1.16.1 Health Care Establishments (HCEs) functioning without valid BMW authorization and BMW treatment facilities

As per the Rules, every HCE treating 1000 or more patients every month has to obtain authorization from the Board for generating, collecting, receiving, storing, treating, disposing or handling of bio-medical waste. It was observed that out of a total of 4287 such HCEs in 10 test-checked Regions, 441 HCEs did not obtain BMW authorizations and 1618 HCEs (42.07 per cent) were functioning even though their authorizations expired.

The Rules stipulated that every occupier shall set up requisite BMW treatment facilities like incinerator, autoclave, microwave system for treatment of waste or ensure requisite treatment of waste by having a tie up with a common BMW treatment facility. It was observed that 131 HCEs in the test checked Regions were not complying with the above conditions.

No directions were issued and no legal action initiated by the Board under the EP Act against the defaulting HCEs.

2.1.16.2 Lack of monitoring on veterinary institutions

BMW Rules are also applicable to veterinary institutions and animal houses. However, it was observed that nine out of the 10 sampled Regional Offices did not have any information regarding the veterinary institutions under their jurisdiction and were not monitoring compliance of BMW Rules by veterinary institutions while one RO (Nalgonda) stated that the information on veterinary institutions was obtained from Animal Husbandry Department and notices were issued to 14 institutions regarding obtaining BMW authorization from the Board.

Government replied that Regional Offices had been directed to identify all such veterinary institutions and monitor implementation of BMW Rules.

2.1.16.3 Non conducting of survey of occupiers

As per BMW Rules, the institutions providing treatment/service to less than 1000 patients per month are exempt from obtaining BMW authorization from the Board. However, Rule 5(2) requires 'Every' occupier to set up the requisite BMW treatment facilities stipulated under the Rules. The Rules did not provide exemption in this regard.

¹⁹ which includes a hospital, nursing home, clinic, dispensary, veterinary institution, animal house, pathological laboratory, blood bank by whatever name called

It was observed that none of the sampled ROs had any information of such occupiers/institutions and hence were not monitoring compliance of BMW Rules in such cases.

2.1.17 Arrears of Water Cess

One of the major sources of Board's income is its share of water cess collected from industries/municipal bodies under Water Cess Act-1977. The water cess collected by the Board is remitted into the Consolidated Fund of India and GoI in turn apportions the water cess amount to CPCB and State Boards.

It was noticed that as of January 2014, water cess charges of ₹11.54 crore (includes ₹10.78 crore due from Municipalities/Municipal Corporations) for the period prior to the year 2005 were not collected by the Board. Further, no demand for the water cess due from municipal bodies after 2005 was raised by the Board as of July 2014.

Though the Water Cess Act provides that non-payment of water cess attracts levy of interest (two *per cent* per month), penalty (up to an equal amount of arrears) and imprisonment (up to six months), the Board failed to collect the arrears for long period.

Non-collection of water cess from users results in shortfall in income to the Board as the amount of cess apportioned to State Board by GoI depends on the amount collected in that State. Thus, amount to that extent is not available to the Board for its activities.

Government replied that Water Cess was not assessed due to non-furnishing of water consumption returns/figures by most of the municipal bodies and that the Board was pursuing the matter with Municipal Administration Department.

2.1.18 Manpower management

Deployment of adequate manpower in the Board is critical to enable it to discharge its widespread and varied functions for effective implementation of environmental laws.

2.1.18.1 Shortage of manpower

There was shortage of manpower in the Board. As against the sanctioned strength of 500 (304 Technical + 196 Non-Technical), there were 231 vacancies (122 Technical + 109 Non-Technical) as of December 2013, which accounts for 46 *per cent*. Vacancies were particularly high in the cadres of Assistant Environmental Engineer (59 vacancies out of the sanctioned strength of 109), Analyst-Grade II (58 vacancies out of 63 posts), Sr.Assistant/Jr.Assistant/Stenographers/Typists (54 vacancies out of 71 posts).

Audit noticed that the Board had initiated (July 2011) proposals for recruitment of 98 (later reduced to 85) technical and non-technical posts through AP Public Service Commission (APPSC). However, the process of obtaining permission from Finance Department (November 2012) and E&FST

Department (May 2013) for conducting recruitment through APPSC took substantial time. In June 2013, Government (in Finance Department) issued consolidated orders for filling up vacancies across various departments including 85 posts (Assistant Environmental Engineers: 27; Analyst-Grade II: 31; Jr.Assistant/Stenographer/Typist, etc.: 27) pertaining to the Board. The recruitment is yet to take place.

Government replied that action for recruitment was already initiated and the process was stalled due to bifurcation of the State.

2.1.18.2 Non-availability of qualified legal officers

Under the provisions of the Acts and Rules made thereunder, the Board was vested with the authority to take legal action on violators of environmental laws. As was pointed out in this report earlier, in many cases, the Board did not initiate legal action against offenders. In the year 2000, as part of decentralization plan the Board decided to form Legal Committees at Zonal Offices (comprising a local NGO, two advocates from the legal panel and the Zonal Officer) to advise on legal action on violators of environmental laws. No such committees were formed so far, and reasons therefor were not furnished to audit by Board.

Further, it was observed that the legal section at the Board's Head Office did not have qualified legal officers and was manned by engineers. The legal cases were being dealt with through standing legal counsels being appointed by the Board from time to time. It is pertinent to mention here that Pollution Control Boards in some other States are functioning with legal cells headed by a Law Officer²⁰.

Government replied that the proposal submitted by Board for recruitment of Legal Officers and Legal Assistants was under consideration and that steps would be taken to strengthen the Legal Wing.

2.1.19 Internal control mechanisms in the Board

2.1.19.1 Coverage of internal audit

Internal audit of the Board and its unit offices was being conducted by Chartered Accountants appointed specifically for this purpose, but the internal audit reports focused on financial/accounting aspects only and did not point out deficiencies relating to implementation of environmental laws by the Board and its Zonal/Regional Offices.

2.1.19.2 Board meetings

Water Act stipulated that the Board shall meet at least once in every three months. It was observed that during the five year period 2009-14, the Board met only 11 times²¹ as against the minimum requirement of 20 meetings.

²⁰ As can be seen from the websites of the respective Pollution Control Boards/Committee

²¹ Twice in 2009-10 and 2010-11; thrice in 2011-12 and 2012-13; and only once in 2013-14

Government replied that the Board has recently been re-constituted (August 2014) and steps would be taken to conduct regular meetings in future.

2.1.20 Conclusion

The Board did not prepare Annual Action Plans from 2012-13 onwards. Zonal laboratories did not have facilities and equipment to analyze necessary parameters of water and air quality. Available equipment was non-functional in some cases. Several industries, municipalities, healthcare establishments were operating without valid/renewed Consent for Operation. There was substantial shortfall in conducting inspections of even highest polluting 'Red' category industries. 116 out of 213 HCEs and 69 out of 73 slaughter houses were operating without sewage treatment facilities. Concentration of Respirable Suspended Particulate Matter in air was more than prescribed standards in 53 out of 74 monitoring stations. Board's planning and action to control air pollution was also deficient. It did little to ensure that the State owned thermal power stations utilize the fly ash generated. There was insufficient monitoring exercised by the Board on compliance of environmental norms by stone crushers. Board's handling and management of Municipal Solid Wastes, e-Wastes, hazardous, bio-medical and plastic wastes issues left gaps due to lack of active participation by stake holders/other departments. Despite such large number of violations, the Board failed to initiate legal action to curtail and contain pollution. Though there are various Environmental Acts/Waste Handling Rules, their implementation by the Board needs to be strengthened much more. There was acute shortage of staff in the Board and it could not function optimally despite availability of funds.

2.1.21 Recommendations

Audit recommends for consideration that

- *Board initiate action to improve facilities and necessary manpower in the zonal laboratories for measuring quality parameters in water and air.*
- *Regular inspections need to be conducted and follow up action initiated against industries particularly in respect of "Red" category.*
- *Board initiate legal actions against violation of provisions of environmental laws and non-compliance with directions of the board.*
- *Board take immediate steps to strengthen its legal mechanism by establishing a full fledged legal cell/section with qualified legal officers.*
- *Board needs to consider preparing comprehensive action plans to counter all types of pollution in the affected zones utilizing its accumulated funds.*

Agriculture and Cooperation Department

2.2 Functioning of Acharya N.G. Ranga Agricultural University, Hyderabad

2.2.1 Introduction

Andhra Pradesh Agricultural University (APAU) was established through Andhra Pradesh Agricultural University Act-1963 (the Act) under the administrative control of Agriculture and Cooperation Department of the State. The University was renamed (1996) as Acharya N.G. Ranga Agricultural University (ANGRAU). The Governor of Andhra Pradesh is the Chancellor of ANGRAU. Objective of the University is to make provision for education in agriculture mainly to rural people of the State and to promote Research, Field and Extension programmes in agriculture and agricultural production.

The University offers Under Graduate, Post Graduate and Doctorate (Ph.D) courses in agriculture, agricultural engineering and home science branches through various colleges in its campus at Hyderabad and colleges/polytechnics located across the State. The University also carries out research activities through its research stations/units scattered across the State. The technology developed through research is disseminated to farmers and other stakeholders through extension activities.

2.2.2 Organizational set up

Board of Management (BOM) is the apex governing body for taking policy decisions as per the University's Statutes and Regulations. The Board consists of 16 members i.e., representatives of State Legislature/Parliament (4), Agro industry (2), State Chamber of Panchayat Raj (1), Agricultural Scientific community (1), Indian Council of Agricultural Research (1), members of Academic Council (3), Secretaries to Government (2), Director of Agriculture (1) and Director of Animal Husbandry (1). The University is also governed by the Academic Council and the Research and Extension Advisory Council.

The Vice-Chancellor is overall in-charge of ANGRAU, who is assisted by a Registrar, a Comptroller, four Directors, two Deans, an Estate officer and a Librarian. Registrar is in charge of administrative, academic and examination matters. Comptroller is in-charge of finance and accounts. The four Directors look after (i) Planning and Monitoring, (ii) International Programmes, (iii) Research and (iv) Extension activities respectively. Deans deal with faculty and student affairs respectively. Estate Officer monitors assets and construction activity of the University.

2.2.3 Audit objectives

Objective of this Performance Audit was to assess whether:

- the University carried out its academic functions, research and extension activities efficiently and effectively in accordance with its stated aims and objectives;
- the objectives (crop improvement and transfer of technology) of main activities (research and extension) were realized; and
- sound administrative and internal control mechanisms are in place.

2.2.4 Audit scope and methodology

Performance Audit covering the functioning of ANGRAU during 2009-14 was conducted (May to September 2014) by test check of records of the University, five²² out of eight Agricultural Colleges, three²³ out of 21 Agricultural Polytechnics, two out of three²⁴ Colleges of Food Science and Technology, four²⁵ out of nine Regional Research Stations, four²⁶ out of 28 Agricultural Research Stations, seven²⁷ Research Units, one²⁸ Bio-Technology Unit, three²⁹ out of 18 Krishi Vigyan Kendras (KVKs) and seven³⁰ out of 22 District Agricultural Advisory and Transfer of Technology Centres (DAATTCs) and two³¹ Engineering Divisions in seven districts³². The districts were selected using Simple Random Statistical Sampling method covering three geographical regions of the State i.e. Andhra, Rayalaseema and Telangana. Units in the districts were selected based on core activities of the University in such a way that each district selected covers at least four of core activities. An entry conference was held in June 2014 with Principal Secretary to Government of AP, Agriculture and Cooperation Department, and Vice Chancellor, Registrar and other Heads of Departments of the University, wherein the audit objectives, criteria and methodology of the performance audit were discussed. Exit conference was conducted (January 2015) with Government/University representatives.

2.2.5 Audit criteria

Performance Audit was conducted with reference to the following sources of criteria:

- Provisions of APAU Act;
- Stated objectives of various Research and Extension projects taken up by the University;
- Plan and budget documents and orders/sanctions issued by Government/ University from time to time, AP Public Works Department Code;
- Guidelines issued by GoI on relevant schemes; and
- Lease agreements relating to estates and contracts for works.

²² Aswaraopet, Bapatla, Jagitial, Rajendranagar and Tirupati

²³ Jagitial, Maruteru and Utukur

²⁴ Bapatla and Pulivendula

²⁵ Guntur, Jagitial, Maruteru and Tirupati

²⁶ Kunaram, Palamaneru, Tandur and Utukur

²⁷ Millet section, Lam, Madira and Perumallapalli; Rice Research Unit, Bapatla; Rice Research Institute, Maruteru; Rice Research Station, Rajendranagar and Wyr

²⁸ Rajendranagar

²⁹ Undi, Utukur and Wyr

³⁰ Chittoor, Eluru, Guntur, Karimnagar, Khammam, Rajendranagar and Utukur

³¹ Bapatla and Tirupati

³² Chittoor, Dr.YSR Kadapa, Guntur, Karimnagar, Khammam, Rangareddy, and West Godavari

Audit findings

The deficiencies noticed in implementation of various activities by University are discussed below.

2.2.6 Academic activities

The University carries out academic activities through its constituent Agricultural colleges/Agricultural Engineering colleges/Polytechnic colleges including 28 private Agricultural Polytechnic Colleges which were affiliated to University. Audit noticed deficiencies in academic matters as discussed below.

2.2.6.1 Model Act

To facilitate uniform structure and to ensure good governance and academic growth in all the Agricultural Universities across the country, Indian Council of Agricultural Research (ICAR) had prepared and communicated (2009) a Model Act for enactment by the respective State Legislatures which is yet to be done (August 2014). It was noticed that the University constituted (April 2013) a Review Committee after nearly four years to review the Model Act and make recommendations. The Committee submitted recommendations in December 2013 which were yet to be approved by State Government.

During exit conference (January 2015), it was replied that efforts were being made to ensure that the Model Act was enacted at the earliest.

2.2.6.2 Shortage of Faculty

University is responsible for appointment of teaching staff in Constituent colleges. Teaching Staff of University consist of Associate Deans (head of college), Professors, Associate Professors and Assistant Professors. Audit noticed shortage of teaching staff due to insufficient recruitment during 2009-14. The men in position against the sanctioned strength in eight Colleges of Agriculture as of June 2014 is given below:

Table 2.11 – Position of teaching staff in Agricultural Colleges of the University

College of Agriculture at	Associate Dean			Professors			Associate Professors			Assistant Professors			Total		
	SS	IP	V	SS	IP	V	SS	IP	V	SS	IP	V	SS	IP	V
Rajendranagar	1	1	0	10	10	0	25	22	3	74	58	16	110	91	19
Bapatla	1	1	0	7	2	5	9	5	4	67	38	29	84	46	38
Tirupati	1	1	0	5	1	4	11	8	3	50	38	12	67	48	19
Aswaraopeta	1	1	0	0	0	0	11	0	11	21	20	1	33	21	12
Jagitial	1	0	1	2	1	1	11	2	9	21	18	3	35	21	14
Mahanandi	1	1	0	0	0	0	8	6	2	15	14	1	24	21	3
Naira	1	1	0	0	0	0	11	6	5	21	14	7	33	21	12
Rajahmundry	1	1	0	2	0	2	11	3	8	22	13	9	36	17	19
Total	8	7	1	26	14	12	97	52	45	291	213	78	422	286	136
Vacancy percentage	13			46			46			27			32		

SS = Sanctioned Strength; IP = In Position and V = Vacancy

(Source: All the information/data mentioned in this report is as per records of the University, unless mentioned otherwise)

As can be seen from the above table, there was 32 *per cent* shortage of teaching staff. The percentage of vacancies was high (46 *per cent*) in the higher cadres of Professor and Associate Professors while it was 27 *per cent* in the feeder cadre of Assistant Professor.

Audit further noticed that the agricultural polytechnics too, did not have sufficient teaching staff. Though the University had prescribed minimum teaching staff requirements for private polytechnics seeking University affiliation, it did not implement these norms in its own constituent polytechnics. As against the requirement of 7 Assistant Professors (later reduced to 5), 3 field staff and 20 farm workers as per the above norms, the University sanctioned only 2 Assistant Professors to each of these polytechnics.

During exit conference, it was replied that action would be initiated at the earliest for recruitment of teaching staff.

2.2.6.3 Workload of faculty

The ICAR, being a regulatory body of Agricultural Education, appointed Fourth Deans Committee for recommending revision of course curricula, norms and standards, academic regulations for colleges, Central assistance for implementation of recommendations, reforms in governance and faculty needs etc. The Deans Committee report (2006) which was communicated by ICAR for implementation by the University had prescribed 4 contact hours to Deans, 6 hours to departmental heads, 8 hours to Professors, 12 hours to Associate Professors and 16 hours to Assistant Professors per week. However, actual work load of teaching staff of its constituent colleges was not available with the Registrar's office. Non-availability of information relating to workload of teaching staff with the University indicates lack of monitoring on this important issue.

The test checked colleges of Agriculture except at Bapatla did not furnish the information relating to workload of teaching staff to audit. In the College of Agriculture at Bapatla, Audit noticed that the average work load of Departmental Heads and Professors during 2009-13 exceeded the prescribed limits by 117 *per cent* and 61 *per cent*, respectively.

2.2.6.4 Inbreeding of teaching staff

Fourth Deans Committee recommended recruiting at least 15 *per cent* of teaching staff at entry level from outside the State through open national selection to facilitate national integration and reduce current 'extensive inbreeding'. Audit noticed that though the University recruited 203 Assistant/Associate Professors and Professors during 2009-13, none of the recruits were from outside the State despite the fact that 68 applicants from other States had applied and 47 applicants were found to be having required qualifications/eligibility as per information furnished by University.

The University attributed reasons for non-recruitment of teaching staff from other States to their lack of knowledge of local language. The reply is not

tenable due to the fact that the only medium of instruction offered in the University was English. Further, the University could have considered measures such as imposing a condition of continuing their services subject to passing proficiency test in the local language within some stipulated period. During exit conference, the University accepted the audit suggestion.

2.2.6.5 Non establishment of distance education centres

Fourth Deans Committee observed that 75 *per cent* of the students in rural India drop out by 10+2 stage and since this is a major work force which has no access to modern technology, it recommended (August 2006) establishment of distance education centres in State Agricultural University to reach the rural students.

Audit noticed that the University has not introduced distance education even after nearly eight years. University stated that agriculture course is practical oriented and it was not possible to offer distance education. The reply contradicts the fact that Universities in other states like University of Agricultural Sciences, Bangalore were offering distance education in agriculture. The Indira Gandhi National Open University (IGNOU), New Delhi is also offering Diploma, PG and Ph.D courses in agricultural subjects in distance/open mode, in accordance with an MoU concluded (2005) with ICAR. Thus, failure of the University to integrate practical component in distance education mode resulted in non-establishment of distance education centres.

Government replied (February 2015) that it would explore possibility of introduction of distance education in agriculture.

2.2.6.6 Establishment of new colleges without staff and infrastructure

(a) A new Agricultural College at Jagitial was established and academic courses started in 2008-09. However, no posts of teaching and non-teaching staff were sanctioned till September 2011 and classes were run by utilizing the services of scientists of RARS, Jagitial and outsourced staff. Even as of March 2014, one out of three posts of Professors, 9 out of 11 posts of Associate Professors, 6 out of 21 Assistant Professors and three out of eight non-teaching posts were vacant, thereby affecting quality of education imparted to students.

(b) A new Agriculture Polytechnic (APT) was established (September 2011) at Madhira with an intake of 25 students in diploma courses with the Senior Scientist & Head of Agricultural Research Station (ARS), Madhira as Vice-Principal. Audit noticed that though the Polytechnic started conducting courses from 2011-12, no infrastructure like buildings/space for conducting classes, laboratories, hostel buildings for boys and girls was provided till today (August 2014). The classes were being conducted in the training halls of ARS, Madhira and hostel facilities for students were being provided in private buildings. The University allocated budget for construction of buildings belatedly in March 2013 and in 2013-14. The construction work of hostel

building commenced only in June 2014, but works relating to college building are yet to commence.

Audit further noticed that no post of teaching and non-teaching staff was sanctioned for the Polytechnic so far. In the absence of regular staff, services of research staff of ARS, Madhira were being utilized for the Polytechnic, thereby adversely affecting the regular research work of ARS.

Government replied that it would provide necessary funds for development of infrastructural facilities and recruit staff shortly.

2.2.6.7 Inadequate facilities in hostels

Audit noticed the following deficiencies in the facilities provided to students:

- Out of the 30 hostels available in eight Agricultural Colleges, 10 hostels (having a total of 419 rooms) were overcrowded, as 1531 students were accommodated in these hostels as against their total intake capacity of 1117 students. Further, 50 rooms (30 rooms of hostel attached to the College of Agriculture, Rajendranagar and 20 rooms of hostel attached to the College of Bapatla) were damaged and no longer fit for use.
- A ratio of 1:6 and 1:8 toilets/bath rooms and students was prescribed in the college hostels for girls and boys students respectively. Computed at this ratio, the shortage of bath rooms and toilets in hostels was 8 each at Aswaraopet; 56 and 60 in Bapatla and 12 and 12 in Mahanandi Agricultural Colleges.

Government replied that it was considering improving the infrastructure facilities at colleges with funding from national banks and other agencies.

2.2.7 Research activities

One of the primary objectives of the University was to promote agricultural research within the state. The University received an amount of ₹211.57 crore from Government of Andhra Pradesh and an amount of ₹97.90 crore from ICAR during the period from 2009-13 totaling ₹309.47 crore for conducting research activities. The University has been carrying out research work in development of high yielding varieties/hybrid seeds, plant protection and dry land rain-fed technologies, introduction of new technologies for improved agricultural practices, etc. The research work is done at nine Regional Agricultural Research Stations (one each in the nine agro-climatic zones) and the Agricultural Research Stations functioning in these zones. The University incurred an expenditure of ₹318.32 crore during 2009-13 on research activities³³ and was involved in 276 research projects during 2009-14 (including 25 new projects taken up during this period) out of which 123 projects were completed.

³³ The University did not furnish the expenditure details for the year 2013-14

It released 66 varieties of seeds during 2009-2013³⁴ as a result of its research activities. For these varieties, University produces breeder seeds and foundation seeds as per indents received from various Government agencies³⁵ and private seed companies. The constraints noticed in research activities are discussed below:

2.2.7.1 Shortage of Scientists in research wing

The sanctioned strength, men in position and vacancies of Scientists in research wing of University during 2009-13 was as follows:

Table 2.12 – Staff position in research units

Year	Sanctioned Strength	Men in position	Vacancies	Percentage of vacancies
2009-10	568	403	165	29
2010-11	547	360	187	34
2011-12	542	362	180	33
2012-13	556	368	188	34

Note: The University did not furnish the vacancy position for the year 2013-14

It can be seen from the above table that the vacancies of research Scientists were not filled and ranged between 29 and 34 *per cent* during 2009-13. The shortage had increased from 165 posts in 2009-10 to 188 posts in 2012-13. The vacancy position of 2013-14 was not made available to audit. Government replied that filling up of vacancies was under active consideration.

2.2.7.2 Stoppage of research work due to non-release of funds

(a) For development of production and protection technologies for organic rice, the University sanctioned (2008-11) ₹50 lakh to Rice Section, Agricultural Research Institute, Rajendranagar under RKVY to identify suitable production, protection packages and conducting of field experiments in four years and to popularize the technology in the fifth year. Audit noticed that though the Rice Section identified suitable production and protection packages by 2010-11 after exhausting the total sanctioned amount of ₹50 lakh, the same could not be validated and fine-tuned through field trials, which required more funds. No assessment was made for the additional requirement of funds and no further amount was released. As a result, the project work was stopped midway. Thus, the objective of development of holistic organic farming package remained unachieved. Government replied that technology to the extent developed is being popularized. The reply was silent about completion of the projects.

(b) University sanctioned ₹70 lakh (August 2011) under RKVY to ARS, Perumallapally of Chittoor district for conducting research on development of (i) sugarcane varieties tolerant/resistant to yellow leaf disease, (ii) suitable

³⁴ 2009: 24; 2010: 19; 2011: Nil; 2012: 23; 2013: Nil

³⁵ State Seed Farms (SSF) / Hyderabad Agricultural Cooperative Association Ltd (HACA) / GoI

control measure to standardize production of disease free seedlings, (iii) diagnostic tools to detect yellow leaf disease, and (iv) management techniques to control yellow leaf disease. Audit noticed that even after project completion period of three years and expenditure of the entire amount of ₹64 lakh till March 2014, the research station could identify only standardized micro propagation protocols for production of disease free seedlings and developed diagnostic tools for detection of yellow leaf disease. The project could not be continued after March 2014 for want of further release of funds, though a proposal for its continuation was submitted to the University on which no action has been taken by it. However, the main objective of developing sugarcane varieties tolerant/resistant to yellow leaf disease and to develop management techniques to control yellow leaf disease were yet to be achieved. Thus, expenditure of ₹64 lakh was incurred on the project of which the objectives were only partially realized.

Government endorsed reply of the University that the projects would be continued on receipt of required funds.

2.2.7.3 Stoppage of research for want of farm land

A Research Station at Palamaneru in Chittoor district was conducting (since 1983) research studies³⁶ on agricultural crops suitable for high altitude areas of the district. Audit noticed that the research work was discontinued in 2006 due to transfer of its farm land to Sri Venkateswara Veterinary University in the same district, subsequent to bifurcation of University. Though ANGRAU repeatedly requested (Since 2006) the Sri Venkateswara Veterinary University to alienate part of land in its favour, the latter did not accept. ANGRAU therefore requested (2007) the District Collector for allotment of another government land near the research station. As the Government did not settle the issue even after 7 years, the already existing schemes of research on high altitude crops were not continued. Services of the Scientist meant for the above activities were being utilized in RARS, Tirupati for other activities, defeating the objective of research in high altitude cropping.

Government replied that request of the University for acquiring land was under consideration.

2.2.7.4 Non development of hybrid seeds

ICAR sanctioned (1989) a project 'development of a hybrid seed for Sorghum' (Jowar) under All India Coordinated Research Projects (AICRP) to Agricultural Research Station, Tandur (Rangareddy district) and the Station spent an amount of ₹97.40 lakh during 2009-13 on Sorghum from ICAR grant. Audit however noticed that even after 25 years of research, the Station had not developed any hybrid seed variety of sorghum. Research Station in its reply stated that research was hampered due to frequent transfer of scientists

³⁶ (i) development of new seeds suitable for hill areas (ii) testing tolerance of paddy to cold in hill area and (iii) Production technology such as optimum levels of fertilizers, pesticides, usage of machinery, disease management, weed management, etc. for other crops

(breeder). While eight years are approximately required for a scientist to develop the seed, the University did not retain the breeder scientist continuously for 8 years from 1991 to date hampering the research work in as much as 10 scientists (breeders) were changed on this work. Further, the post was vacant for one year during 2006.

Government replied that the University was instructed not to transfer scientists involved in specific research activities.

2.2.7.5 Non release of developed varieties

After completion of research and developing a new seed, the University approaches State Varietal Release Committee (SVRC) for official release of the seed. After the SVRC declares the seed as eligible for release, a notification by GOI is issued so as to regulate the quality of the seed during sale.

The Rice Research Unit, Bapatla developed (2012) a rice variety (BPT 2295). However, the seed was not yet released due to non-convening of meeting of SVRC by GoAP after 2012 denying its benefits to farmers.

Government replied that suitable directions were issued to convene SVRC meeting and to release the variety early.

2.2.8 Production and sale of breeder and foundation seed

After conducting research on development of new variety, a 'nucleus seed'³⁷ is developed by the research units of University. From the nucleus seed, the scientists develop 'breeder seed'³⁸, which is sold to indenting agencies. The agencies multiply the breeder seed into 'foundation seed'³⁹. From foundation seed the agencies produce 'certified seeds'⁴⁰, which are finally sold by the agencies to the farmers for sowing crops. Sometimes, the research stations of the University also undertake production of foundation seed. The deficiencies noticed in production and sale of breeder seed are discussed below.

2.2.8.1 Loss due to sale of breeder seed as grain

Out of 96740 quintals of breeder seed produced during 2009-14, the University could not dispose off 13021 quintals due to non lifting of seed (13001 quintals) from the stations by indenting agencies and loss of

³⁷ Nucleus seed is pure seed of improved/hybrid variety of two parental lines produced under supervision of the evolver of that variety

³⁸ Breeder seed is seed directly controlled by the originating or sponsoring plant breeding institution, or person, or designee thereof

³⁹ Foundation seed is seed which is the progeny of breeder of foundation seed produced under control of the originator or sponsoring plant breeding institution, or person, or designee thereof

⁴⁰ Certified seed shall be progeny of Breeder, Foundation or Registered seed so handled as to maintain satisfactory genetic purity and identity, and which has been acceptable to the Certifying agency

germination⁴¹ on account of improper storage of seed (19.75 quintals of Tellahamsa paddy in Rice Section, Rajendranagar). As a result, the University had to dispose off the seed for non-seed purposes at a lower rate than that of breeder seed, causing loss of ₹2.2 crore.

The Agriculture College Farm at Tirupati produced 17 quintals breeder seed and 6 quintals of foundation seed of Red gram (LRG-41) during Kharif 2011. Of this, only one quintal of breeder seed and 2.4 quintals of foundation seed were sold leaving a balance of 16 quintals of breeder seed and 3.6 quintals of foundation seed. Due to improper storage in farm godown resulting in pest attack, the seed did not achieve minimum germination percentage (December 2012) and the seeds were disposed off (September 2013) at non-seed rates which resulted in loss of ₹1.41 lakh.

In the following cases, the breeder and foundation seed produced by the research stations which were not lifted by indenters and became unfit for use for seed purposes was yet to be disposed off as non-seed:

- 41.70 quintals of breeder seed of black gram, red gram and green gram valuing ₹2.56 lakh remained undisposed with Regional Agricultural Research Station (RARS), Lam, Guntur district since 2009-10.
- 231.59 quintals of groundnut breeder and foundation seed produced during 2012-13 worth ₹20.15 lakh remained undisposed in RARS, Tirupati.

Government replied that efforts were being made to impose penalties on/blacklist the non-lifting agencies.

2.2.8.2 Non receipt of amounts for disposed seed

On receiving indents from APSSDC⁴² and Joint Directors of Agriculture for supply of breeder seed, the University supplied 2,836 quintals of seed (castor and ground nut) between 2012 and 2013 for which an amount of ₹1.76 crore was yet to be received from indenting agencies. Audit noticed that University did not collect any security deposit or the cost of seed before starting production of seed. As a result, the University was unable to recover the amount from indenting agencies after lifting the seed. Audit noticed that 25 *per cent* of breeder seed cost is being collected by GOI for the breeder seed produced by the institutes of GOI as advance from the indenters which is liable for forfeiture in case of non-lifting by the indenters, but the same system is not being followed by the University.

Government replied that University was instructed to collect the dues from indenting agencies and that the University decided to collect 25 *per cent* of cost of seed as advance from indenting agencies.

⁴¹ When more than 20 *per cent* of the seeds planted do not germinate, it is considered as loss of germination. Such seed is not used for seed purpose and is sold as a normal food grain

⁴² AP State Seed Development Corporation

2.2.9 Extension activities

After developing high yielding varieties of seeds, seeds which are resistant to diseases/extreme weather conditions, crop/production technologies, etc., through extensive research, it is important that the results of research reach the farmers. The University has an exclusive wing for popularizing the results of research by conducting training programmes and demonstrations to farmers and officials of Agriculture Department. Audit noticed the training programmes/demonstrations were not conducted as per plan:

- Dr.Y.S.R. district has 51 revenue mandals. Though District Agricultural Advisory and Transfer of Technology Centre (DAATTC), Kadapa achieved its targets fully during 2009-13, it did so by concentrating on farmers training programmes only in 19 mandals thereby neglecting the transfer of technology to the farmers of 32 mandals.
- DAATTC, Guntur conducted only one training programme during 2009-10 against a target of 10. It did not conduct any training programme in 2010-11 against the target of 11. However, targets were achieved during 2011-14.

In reply, Government stated that instructions were issued to the University to conduct required number of training programmes in future.

- There was significant shortage of staff in the extension units as shown below:

Table 2.13 – Staff position in Extension Units

Year	Sanctioned Strength	Men in position	Vacancies	Percentage of vacancies
2009-10	179	129	50	28
2010-11	179	129	50	28
2011-12	200	129	71	36
2012-13	215	128	87	40

Note: The University did not furnish the details for the year 2013-14

As seen from the above, the percentage of vacancies has been increasing every year and reached 40 *per cent* by end of 2012-13, which would have impact on the extension activities.

- The Zonal Research and Extension Advisory Council of the University for Southern Telangana Zone in its periodical review meetings (during 2009-13) on the work done by the various wings of the University identified 34 gaps (work to be done) (**Appendix 2.4**) in research and extension activities. Audit noticed that as of August 2014, the DAATT Centre at Rajendranagar, Hyderabad did not take remedial measures on 11 gaps pointed out by the Council, i.e. non-popularization of developed seed, indiscriminate use of fertilizers and pesticides by farmers, non-adoption of better agricultural practices by farmers, etc. Thus, the recommendations of the Advisory Council were not properly implemented.

University replied that the gaps would be attended to in collaboration with DAATT.

2.2.9.1 Lack of demand for new varieties

With a view to introduce improved varieties that are tolerant to diseases/pests/cold/high temperatures the university released, inter alia, seed of 21 varieties of rice, 3 varieties of maize, 3 varieties of soyabean, 8 varieties of groundnut during 2009-13. However, Audit noticed that production of breeder seeds of nine varieties (Rice: 2; Maize: 2; Groundnut: 2; and Soyabean: 3) was nil during the above period due to lack of demand as no indent from any organization/agency was received. In respect of other varieties also, the demand was poor since the University produced breeder seed of only 1-100 quintals for 13 varieties; 101-200 quintals for 4 varieties; 201-300 quintals for 4 varieties and 301-700 quintals for 4 varieties as shown in **Appendix-2.5**.

In the records scrutinized in audit, no mechanism is found in the University to review and analyze the reasons for lack of demand in respect of some of the newly released varieties and to take appropriate measures to popularize them in coordination with the Agriculture Department, so as to ensure that the benefits of research activities reach the farmers fully.

During exit conference, while accepting the audit observation, the University assured that a suitable mechanism would be instituted.

2.2.10 Financial management

The University's financial resources are grants (Plan and Non-plan) from GoAP, GoI, funds from ICAR and University's internal receipts like fees from students, sale proceeds of seeds, fees from companies towards evaluation of agricultural inputs, etc. During 2009-13, the University received a total amount of ₹1731 crore and incurred an expenditure of ₹1576 crore.

The deficiencies noticed in financial management are discussed below.

2.2.10.1 Large variations between budget estimates and actuals

Audit noticed large variations between the budget estimates and actuals in both receipts and expenditure during 2009-13, as shown below:

Table 2.14 – Position of variations between budget estimates and actuals

(₹ in crore)

Year	Receipts			Expenditure		
	Budget estimates	Actual	Variation (% variation)	Budget estimates	Actual	Variation (% variation)
2009-10	189.15	290.77	(+) 101.62 (54%)	243.18	259.78	(+) 16.60 (7%)
2010-11	294.93	477.28	(+) 182.35 (62%)	294.93	449.00	(+) 154.07 (52%)
2011-12	390.14	483.11	(+) 92.97 (24%)	390.14	435.45	(+) 45.31 (12%)
2012-13	375.56	480.32	(+) 104.76 (28%)	375.56	432.21	(+) 56.65 (15%)
Total	1249.78	1731.48	(+) 481.70 (39%)	1303.81	1576.44	(+) 272.63 (21%)

Note: The receipts and expenditure particulars for 2013-14 were not furnished by University

Actual receipts and expenditure exceeded the budgeted amounts. Variation in receipts ranged from 24 to 62 *per cent* while the variation in expenditure ranged from 7 to 52 *per cent*.

Such large variations between the budgets and actual indicate unrealistic budgeting and lack of budgetary controls. Government replied that university was being advised to prepare realistic estimates in future.

2.2.10.2 Non reconciliation of cash balance

Audit noticed that three test checked units (ARI, Rajendranagar; SV Agricultural College, Tirupati; and Agricultural College, Aswaraopet) did not reconcile the cash balances of their cash books with that of bank during the period 2009-13, though there were discrepancies in closing balances. Government replied that instructions were being issued to University to rectify the defects.

2.2.10.3 Submission of incorrect Utilization Certificates

In respect of the amounts received from Rastriya Krishi Vikas Yojana (RKVY), ICAR and GoI, the University is required to submit utilization certificates (UCs) for each year. Audit noticed the following:

- The University received (March 2013) an amount of ₹19.65 crore of ICAR special grant for developmental activities. Though it incurred expenditure of only ₹75 lakh up to March 2014, it furnished UC for the entire ₹19.65 crore in June 2013 itself. Audit noticed that the works did not even commence at the time of furnishing the UC.

Audit noticed that the unit offices submitted incorrect expenditure figures to the University in the following cases:

- An amount of ₹50 lakh of ICAR special grant was given (March 2013) to College of Food Science and Technology, Pulivendula for procuring equipment. However, the College furnished utilization report for ₹49.76 lakh in July 2013 by drawing a demand draft in favour of the supplier without actual receipt of equipment.
- An amount of ₹56 lakh (RKVY grant) was given to ARS, Perumallapally during 2011-12. The station spent only ₹31 lakh, but furnished expenditure report for ₹40 lakh after drawing a DD in favour of a private firm for ₹9 lakh towards construction of green house. The work was entrusted to another firm at a later date in March 2013, whereas the UC was submitted for full amount in September 2012.

Government replied that UCs for full amount were being furnished to ICAR initially on receipt of funds and Audited UCs were submitted after incurring expenditure but the above procedure was incorrect.

2.2.10.4 Unfruitful expenditure due to non-completion of construction work

- University sanctioned ₹40 lakh to KVK, Nellore for construction of residential quarters. The work was taken up in June 2009. After incurring an expenditure of ₹40 lakh (July 2010), the estate officer reported to the University that the work was completed. Audit noticed from the records of KVK that the buildings were not actually completed, as essential items such as flooring, painting, fixing of doors and windows, electrical work, etc. were not taken up, rendering the buildings unfit for occupation. Thus, the expenditure of ₹40 lakh remained unfruitful nearly for four years.
- The University sanctioned (November 2009) ₹one crore under ICAR development grant for construction of Education Museum on 3rd floor over the existing building of SV College of Agriculture, Tirupati. An amount of ₹1.16 crore was spent on construction and the work was stopped (December 2012) without completing flooring, water supply and sanitation, electrical work, doors, etc. Non completion of work even after five years of its sanction resulted not only in non establishment of museum but also the expenditure of ₹1.16 crore remained unfruitful.
- The farm of Agriculture College, Bapatla, meant for conducting practicals by students was getting inundated due to rains causing submergence of farm. University therefore, sanctioned (February 2009) ₹28 lakh, for constructing a 1520 meter long bund to prevent rain water entering into field and released ₹11 lakh to Estate Officer. After constructing 807 meters, the Estate Officer stopped (February 2010) further work for want of funds. Thus, the risk of inundation was not removed even after five years of sanction of work.
- At the instance of GoAP, the AP Industrial Infrastructure Corporation, Kadapa allotted (June 2010) 32.63 acres of land in Chinna Rangapuram village of Pulivendula mandal to the University for establishing College of Food Science and Technology. Audit noticed that even after making payment (March 2013) of ₹80 lakh, registration of the land in favour of Comptroller of University did not take place due to non-payment of registration charges (₹3.62 lakh). Meanwhile, some of the buildings for college, hostel and administrative offices were constructed on the land which was not transferred/registered in the name of University.

Further, construction of the main college building, which was taken up (October 2010) at a cost of ₹4.29 crore for completion by October 2011, was not completed as of July 2014 due to paucity of funds. This resulted in denial of adequate accommodation to students. Besides, the expenditure of ₹3.3 crore incurred on the building remained unfruitful.

- To cater to the research needs at RARS, Lam, Guntur district, an overhead tank was proposed for construction during January 2012 (cost: ₹12.12 lakh). Though the work was entrusted to a contractor in June 2012 the same was not executed. The Estate Officer did not take any action to terminate the contract and to entrust the same to another contractor resulting in not only denying facilities of research but also blocking up of funds besides possible cost escalation.

Government endorsed the reply given by University that efforts were being made to complete the above works in the next financial year.

- To ensure good quality of work GoAP directed (2006) all the authorities of the Universities to provide information relating to estimates, tenders, agreements and other relevant information/data to the Quality Control (QC) Wing of Road & Buildings Department and transfer an amount of 0.5 *per cent* of estimated costs to the QC Circle of R&B Department. Though this provision was made in the estimates, the University had neither transferred the amounts to R&B Department nor were QC checks conducted by R&B Department. Thus, there was no assurance that the works executed (more than 747 works worth ₹66 crore) by University during last five years were of required quality standards.

Government endorsed reply of the University that initially, the staff of R&B Department conducted QC checks but later stopped inspecting the University's works. It was also replied that quality of works was being ensured by its field engineers during execution. But the above procedure is contrary to Government orders.

2.2.11 Estate management

For execution of civil (construction and maintenance) works, the University had an engineering department headed by 'Estate Officer' who is assisted by three Executive Engineers in three Divisions (at Rajendranagar, Tirupati and Bapatla). Audit noticed deficiencies in estate management of the University, as under:

2.2.11.1 Lack of monitoring on University's assets

University holds farm lands, buildings, etc. in its headquarters at Hyderabad and unit offices/research stations spread across the State.

Audit noticed that an Assets Register in respect of the assets located in its campus at Hyderabad was being maintained by the University. However, Asset Registers for the assets available with colleges, research stations, DAATT centres, KVKS, etc. located across the State were not being maintained either by the University or by the respective units, indicating lack of monitoring.

An extent of 372 acres of land was leased to various organizations. However, the University neither maintained a Register of Leases nor furnished the lease agreements and details of lease amounts realizable, collected and balance to audit.

During exit conference, it was replied that action would be taken to maintain Assets Registers.

2.2.11.2 Non maintenance of buildings

Fourth Deans Committee recommended that the University allocate ₹5 lakh or one *per cent* of present infrastructure cost, whichever is higher in the budget estimates for maintenance of buildings. However, no such allocations were being made in the budget estimates for their maintenance/repairs.

Audit noticed that in College of Agriculture campus at Bapatla, 14 educational buildings worth ₹3.26 crore were in bad and dilapidated condition and 7 buildings worth ₹70 lakh were facing water leakages. Besides, 14 staff quarters (out of 16) were lying vacant due to lack of maintenance.

Similarly, 9 out of 17 staff quarters meant for the staff of RARS, Jagtial were lying unoccupied since 2009-10 due to poor maintenance.

It was noticed that six test checked research stations and KVKs⁴³ did not have compound walls around their premises to prevent trespassing, encroachments or damages to crops under research/demonstrations.

Government replied that funds would be provided for renovation/reconstruction of buildings shortly.

2.2.12 Internal Controls and Monitoring

University prescribed financial powers to its various officers for purchase, tendering, etc. However, internal control mechanism was weak as discussed below.

2.2.12.1 Split purchases to avoid sanction of competent authority

As per delegation of financial powers, Associate Dean has to follow open tender system for purchases valuing more than ₹5 lakh. However, the Associate Dean, College of Food Science and Technology, Pulivendula purchased (March 2013) equipment worth ₹19.96 lakh by splitting up the value below ₹5 lakh, thereby avoiding tender process.

Further, the Associate Deans were competent to sanction purchase of furniture up to ₹0.80 lakh at a time. However, the College procured (September 2013 and January/February 2014) furniture worth ₹5.27 lakh in small lots by splitting the purchase orders so as to avoid codal formalities.

Government replied that instructions were being issued to the University to follow financial procedures.

2.2.12.2 Stock entries for stock not actually received

(a) Associate Dean, Agriculture College, Bapatla placed (February and March 2014) purchase orders worth ₹77.33 lakh with AP State Agro Corporation Limited, Guntur for supply of equipment required for development activities of seed production, etc. Audit noticed that even without receipt of equipment worth ₹44.34 lakh, entries were made in the Stock Register that all items were received in March-May 2014 and the full amount of ₹77.33 lakh was paid (July 2014) to agency. Equipment valuing ₹24.49 lakh was received later in August 2014 and ₹19.85 lakh worth equipment was not received yet (August 2014).

⁴³ ARS, Tandur; KVK, Wyrā; Agriculture College, Aswaraopet; Agriculture College, Polytechnic and RARS at Jagtial

(b) Similarly, in the College of Food Science and Technology, Bapatla, Audit noticed that stock entries for ice cream making equipment valued at ₹28.86 lakh were made in August 2013 itself while the equipment was actually received in November 2013.

Government stated that instructions were issued to the college for proper maintenance of stock register.

2.2.12.3 Internal Audit system

The University had an Internal Audit (IA) wing functioning under the Comptroller to audit its units and to rectify inaccuracies and other irregularities, if any. However, the IA wing audited only 19, 54, 52 and 19 units respectively during the four years from 2010-11 to 2013-14, out of the total of 154 units under the University. The shortfall was mainly due to shortage of staff in IA wing. As against the requirement of three teams (each consisting of one superintendent, two Senior Assistants and one Junior Assistant/Typist), the IA wing was operating with only one audit team (with two superintendents).

Due to low coverage of internal audit, there was no assurance to the management that the departmental rules, regulations and procedures were being complied with. Government endorsed the reply of the University that action would be taken to strengthen IA wing by posting required staff.

2.2.12.4 Lack of response to State Audit

Audit of the University along with its 154 units is being conducted annually by the State Audit Department of GoAP. Audit noticed that as of July 2014, 1270 comments issued during 2009-12 by State Audit were pending due to lack of response from the unit officers to the instructions of the University to furnish prompt replies to audit observations. This shows lack of timely remedial measures on the irregularities pointed out by State Audit. Government replied that instructions were being issued to University for timely replies and settlement of audit comments.

2.2.13 Conclusion

The academic, research and extension activities of the University suffered from shortage of teaching staff and scientists. The 'Model Act' which was aimed at ensuring good governance and academic growth was yet to be enacted and implemented. There were cases of establishment of new colleges without adequate infrastructure and teaching staff, inbreeding of teachers, inadequate facilities in colleges and hostels, etc. The University did not establish distance education centres. Though the University has been conducting research and releasing new varieties of seeds, there were deficiencies like non-completion/stoppage of research projects due to transfer of scientists, non-release of funds, etc. There was insufficient monitoring over the University's assets.

2.2.14 Recommendations

Audit recommends for consideration that

- *Immediate steps be taken to fill up the large number of vacancies existing in teaching, research and extension staff to improve the performance of the University.*
- *The University see that adequate teaching posts are sanctioned to all the colleges and necessary infrastructure facilities are provided in the colleges and hostels.*
- *Efforts be made to establish distance education facilities so as to improve the reach of academic activities to rural students.*
- *University improve the monitoring on its research projects to ensure that projects are not stopped midway and achieve their intended results.*
- *University put in place a mechanism to review and analyze the reasons for lack of demand in respect of some of the newly released varieties of breeder seeds and to take appropriate measures to popularize them in coordination with the Agriculture Department.*
- *University ensure that its budget estimates are prepared realistically to avoid wide variations between budget estimates and actual.*
- *University put in place a suitable mechanism to inventorize and monitor the assets available in all its constituent colleges and research units.*