

## ***Executive Summary***

The Air (Prevention and Control of Pollution) Act, 1981, defines air pollution as “presence in the atmosphere of any air pollutant” where air pollutant is defined as any solid, liquid or gaseous substance including noise present in the atmosphere in such a concentration which tends to be injurious to human beings, other living organisms, plants, property or environment.

At the State level, Gujarat Pollution Control Board (GPCB) discharges functions related to pollution control and protection of the environment by effective implementation of various laws of the pollution. Commissioner of Transport, Gujarat is responsible for regulating and monitoring vehicular emissions.

The Performance Audit was conducted between March 2019 and November 2019 and was further updated to cover the period from 2014-15 to 2020-21. Audit findings in the report relate to status of Ambient Air Quality (AAQ) in the State; air pollution due to source emission, fugitive emissions, thermal power plants and automobiles; Critically Polluted Areas in the State; and other issues.

Air pollution caused 16.70 lakh death in 2019 in India and costs Indian businesses about \$95 billion every fiscal year.

***(Paragraph 1.2 and 1.3)***

Based on the annual average data of two major air pollutants PM<sub>10</sub> and PM<sub>2.5</sub> of 62 stations, between 2011-12 and 2018-19, the concentration of these pollutants increased indicating substantial deterioration of the AAQ in the State. However, in 2019-20 and 2020-21, overall AAQ improved in the areas being monitored.

***(Paragraph 4.2)***

Consolidated Consent and Authorisation issued by GPCB to an Industry for monitoring of AAQ included only four pollutants (PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub> and SO<sub>2</sub>) instead of 12 pollutants. The GPCB was also not regularly monitoring noise levels in the premises of the industrial units.

***(Paragraph 4.3)***

The GPCB monitored AAQ at 62 stations covering only 14 cities. In major industrial estates and areas prone to air pollution, AAQ was not being monitored.

***(Paragraph 4.4)***

Between 2014-15 and 2019-20, the concentration of benzene and o-xylene increased significantly. However, in 2020-21, the concentration had reduced marginally mainly due to slow down of industrial activities during the COVID-19 pandemic. Exposure to high levels of benzene and o-xylene causes neurotoxic symptoms and persistent exposure to these compounds may cause injury

to human bone marrow, DNA damage in mammalian cells and damage to the immune system.

**(Paragraph 4.5)**

The CPCB directed GPCB in February 2014 to ensure the installation of the Online Continuous Emission Monitoring System (OCEMS) in 422 highly polluting units of 17 category by March 2015. OCEMS plays a vital role in regulating pollution compliance by industries with minimal human interventions. However, even after a lapse of more than six years, GPCB could not enforce the installation of OCEMS in 67 units. Also, online emission data of 17 category units were not in the public domain.

**(Paragraph 5.1)**

Source emission monitoring by GPCB was inadequate and in comparison to water sampling, air sampling was insufficient. During 2020-21, under the Air Act, GPCB collected and analysed 4,415 air samples whereas, under the Water Act, 1974, the number of samples collected and analysed were 21,992.

**(Paragraph 5.2)**

Source Apportionment Studies (SAS) are necessary to assess the future projections of emission level, develop cost-effective action plans and interventions for mitigating emission and evaluation of various control options. GPCB has completed SAS for Ahmedabad and Surat. SAS was under preparation in respect of Vadodara and Rajkot (January 2022). For remaining cities and polluted areas, it was not taken up by the GPCB.

**(Paragraph 5.5)**

Fugitive emissions are unintended emissions from facilities or activities that cannot reasonably pass through a vent, stack, or chimney system to reduce emissions. Construction activities, solid waste, operation of hot mix plants and brick kilns, stone crushers, sawmills, ice making plants, and cold storage are major sources of fugitive emissions.

**(Chapter 6)**

Unscientific disposal of solid waste in Gandhinagar city and non-disposal of legacy solid waste in Ahmedabad was major source of fugitive emission in these cities.

**(Paragraph 6.3 and 6.4)**

Stone crushers and hot mix plants were causing fugitive emission due to non-compliance with the Siting criteria and air control measures.

**(Paragraph 6.5 and 6.7)**

Brick kilns were causing more fugitive emissions due to non-adoption of cleaner technology.

**(Paragraph 6.6)**

Thermal Power Plants (TPPs) are a major source of air pollution. Moreover, coal-based TPPs contribute disproportionately higher emissions than emissions due to industries. Gujarat houses 47 TPPs units and its share in thermal power

generation in the national contribution is 10.09 *per cent*. Installation of Flue-gas desulphurisation (FGD) reduces the emission due to TPPs. Audit observed that the timeline of December 2022 for installation of FGD may not be adhered by the TPPs.

***(Paragraph 7.1)***

Fly ash is one of the major contributors to particulate matter. TPPs were required to dispose of 100 *per cent* legacy fly ash by 31 December 2017. However, with the major TPPs, there was undisposed legacy stock of fly ash of 610.94 lakh tons as of March 2021. Audit also observed that State Government Departments had not made mandatory use of fly ash in Government financed works despite MOEF&CC directions.

***(Paragraph 7.5.1 and 7.5.3)***

Three TPPs were disposing fly ash in contravention to the MOEF&CC regulations by dumping it in low-lying areas, city areas and riverbanks without the permission of GPCB.

***(Paragraph 7.5.2)***

Vehicular emission is a major source of air pollution in urban areas. In State, there were only 1,192 centers for issuing Pollution Under Control (PUC) Certificates against 2.52 crore registered vehicles in 2018-19. Technical Audit of each PUC centre was not regularly conducted.

***(Paragraph 8.2)***

Adulterated auto fuel aggravates vehicular emission. Audit noticed monitoring of 1,506 petrol pumps only against the norms of 33,854 petrol pumps during 2014-15 to 2018-19 by the Directorate of Food and Civil Supplies. Inadequate monitoring of petrol pumps may lead to a sale of adulterated auto fuel.

***(Paragraph 8.3)***

Audit observed the non-installation of Continuous Ambient Air Quality Monitoring Stations, non-conducting of health studies and lack of monitoring of Remedial Action Plan in critically polluted areas.

***(Paragraph 9.2, 9.3 and 9.4)***

The State Government delayed the formulation of a scheme for utilization of funds received from forfeiture of bank guarantees obtained from the habitual defaulters. Also, the project approved for utilization of funds was industry-specific instead of being community-oriented.

***(Paragraph 10.1)***

The Environmental Audit Report does not provide assessment of the degree of pollution potential of a particular industry or class of industries and the environmental information was not available in the public domain.

***(Paragraph 10.2)***

Greening of highways helps in reduction and control of air pollution and noise pollution. Audit observed lack of policy interventions for the greening of highways.

**(Paragraph 10.3)**

The GPCB is responsible for monitoring and supervising over 30,964 industries, 42,563 health care units, 34 common effluent treatment plants, 21 common bio-medical waste treatment facilities, etc. The GoG abolished 223 posts in GPCB despite the manifold increase in work over the years and increasing pollution in the State. The GPCB is accomplishing its regulatory function through 505 posts only which adversely impacts effective discharge of its regulatory functions.

**(Paragraph 10.4)**

## **Recommendations**

In order to enforce the provisions of the Air (Prevention and Control of Pollution) Act, 1981 efficiently and effectively, and to ensure effective discharge of regulatory functions by GPCB, the State Government/ GPCB may consider the following recommendations:

- ***Continue making efforts towards improving ambient air quality by monitoring the concentration of PM<sub>10</sub> and PM<sub>2.5</sub>, particularly with special focus on PM<sub>10</sub> as even in 2020-21 concentration was more than 99 µg/m<sup>3</sup> in 33 out of 62 stations.***
- ***Strengthen the human resources of GPCB to monitor all 12 pollutants.***
- ***Expedite establishment of AAQ monitoring stations in areas not covered under existing monitoring system and regularly monitor the ambient air quality in other areas.***
- ***Set up AAQ monitoring stations in the industrial estates with GIDC and persuade GIDC to provide capital assistance for setting up of AAQ monitoring stations similar to assistance provided for setting up of common effluent treatment plants and common incineration plants.***
- ***Analyse and reconcile the wide variation between manual and sensor-based data so that quality of data used for monitoring air quality is improved.***
- ***Ensure installation of OCEMS in all the highly polluting industries and ensure its connectivity with CPCB and GPCB server to strengthen monitoring of red category units.***
- ***Evolve a mechanism to get data on import of pet coke in the State from the Gujarat Maritime Board and the Director-General of Foreign Trade and to ensure that bulk consumers of pet coke upload consumption data so that use of pet coke can be monitored and regulated.***
- ***Set up a mechanism to regularly monitor AAQ in ESZ of Thol Wildlife Sanctuary to maintain its ecology as a potential Ramsar site.***

- *Develop a reporting mechanism involving agencies and departments engaged in infrastructure activities for strict enforcement of mitigation measures.*
- *Ensure that the provisions of the Air Act, 1981 and the directions of R&B Department are strictly complied with.*
- *Establish a mechanism in consultation with R&B Department to collect real-time production data of HMPs to check the evasive polluters.*
- *Disseminate directions of CPCB on the adoption of new technology to the brick kiln manufacturers. Besides, non-agriculture permission granted by the revenue authorities to the brick manufacturers may include a condition for adoption of cleaner technology.*
- *Ensure that the stone crushing units follow siting criteria strictly and develop a system for self-regulation and self-monitoring by the stone-crushing units.*
- *Bring saw mills and wood-dependent industrial units under the ambit of the Air Act by issuing CCA in coordination with the PCCF&HoFF.*
- *Consider promoting multi-fuel technology for power generation to meet demand for power in view of air pollution caused by coal-based thermal power plants.*
- *Follow up the compliance with the CPCB's directions and monitor the progress of installation of FGD in CPPs.*
- *Direct its different departments such as Roads and Buildings, Urban Development and Urban Housing, Panchayat and Rural Housing, etc. to coordinate with Brick kilns to promote use of fly ash in their construction and allied activities.*
- *Frame a policy to encourage use of fly ash-based bricks and other building materials.*
- *Ensure strict implementation of PUC norms to control the emission from automobiles. A mechanism needs to be put in place for regular quality checks of auto fuel sold at petrol pumps.*
- *Evolve a system to collect health data on the lines of CPCB and provide such information to the State Health Department for designing necessary interventions to prevent and mitigate the impact of air pollution on the health of the peoples living in the CPAs.*
- *Expedite the installation of CAAQMS in all the six CPAs and million-plus cities (four) of the State to disseminate real-time information on AAQ of the CPAs and to enable timely intervention by the GPCB for mitigation of air pollution.*
- *Frame a policy for greening of highways and ensure its compliance by the implementing agencies.*