BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
Principal Bench, New Delhi

O.A. No. 638/2023

In re: News item appearing in Times of India dated 10.10.2023 titled "Feeling anxious? Toxic air could be to blame"

Index

(Pankaj Agarwal)
Scientist F
Central Pollution Control Board
Delhi-110032

Date: 09.12.2023
Place: Delhi

BEFORE THE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH, NEW DELHI

ORIGINAL APPLICATION NO 638 OF 2023

IN RE: NEWS ITEM APPEARING IN TIMES OF INDIA DATED 10.10.2023 TITLED "FEELING ANXIOUS? TOXIC AIR COULD BE TO BLAME"

REPLY AFFIDAVIT ON BEHALF OF RESPONDENT NO. 2, CENTRAL POLLUTION CONTROL BOARD (CPCB)

I, Pankaj Agarwal, S/o Late Shri Jagdish Saran Agarwal, aged 49 years, working as Scientist 'F' in the Central Pollution Control Board, Delhi, do hereby solemnly affirm and declare as under:

NOTARY PUBLIC R.L. Chaudhary N.C.T. of Delhi Regd. No. 1513 GOVT. OF INDIA

The Hon'ble NGT, New Delhi in OA No. 638 of 2023 issued an order dated 31.10.2023, which inter-alia states that

"*Hence, the issue which needs to be examined in this OA is in respect of various chemical and physical components causing air pollution and adverse effect of each of such physical and chemical component on different organs of human body. Adequate measures are required for control of such air polluting components and their adverse effect on various organs of human body, especially those which are affecting the brain and emotional, psychological aspect".*

In compliance to the above order of the Hon'ble NGT, it is humbly submitted that:

In order to set a level beyond which there is a risk to human health from exposure to certain pollutants, National Ambient Air Quality Standards (NAAQS) were introduced in 1994 and revised in 2009 in India. NAAQS, 2009 takes into account long term exposure to air pollution based on annual norms or brief exposures through 01/ 08/ 24 hourly standards for 12 parameters. Copy of standards annexed herewith as **Annexure – I**.

The final report submitted by the IIT-Kanpur during revision of the National Ambient Air Quality Standards in 2009 (NAAQS), defines the following health effects of 12 notified parameters:

Pollutant	Health Effect
Benzene, $\mu g/m^3$	Several clinical and epidemiological studies have shown that long-term exposure to benzene can lead to leukaemia, and benzene has been classified as a human carcinogen

	(Group 1) by International Agency for Research on Cancer (IARC, Lyon). In addition, a number of non-cancer health effects are associated with benzene exposure such as disorders of blood, harmful effects on bone marrow, anaemia and reduced abilities of blood to clot, **damage to immune system** and a reproductive and developmental toxicant.
Carbon Monoxide (CO), mg/m^3	Carbon monoxide diffuses rapidly across alveolar, capillary and placental membranes. Approximately 80-90% of absorbed carbon monoxide binds with Hb to from carboxyhaemoglobin, which is a specific biomarker of exposure in blood. The affinity of Hb for CO is 200-250 time that of oxygen. The initial symptoms of CO poisoning may include headache, dizziness, drowsiness, and nausea. These initial symptoms may advance to vomiting, loss of consciousness, and collapse if prolonged or high exposures are encountered. Coma or death may occur if high exposures continue.

Benzo (a) Pyrene (BaP) – ng/m^3	The serious health effects, caused from acute and chronic human exposure. These health effects include **carcinogenesis**, localized skin effects, pulmonary and respiratory problems, genetic reproduction and development effects, and **behavioural neurotoxic** and other organ system effects.
Arsenic (As), ng/m^3	The clinical picture of chronic poisoning with arsenic varies widely. It is usually dominated by changes in the skin and mucous membranes and by neurological, vascular and hematological lesions. Involvement of the gastrointestinal tract, increased salivation, irregular dyspepsia, abdominal cramps and loss of weight may also occur. Reports of diminished sexual activity in persons with chronic arsenic exposure are frequent. Arsenic and its inorganic compounds have long been known to be **neurotoxic**. Chronic exposure to arsenic dust caused a **decrease in peripheral nerve conduction velocities**. Increased mortality from cardiovascular diseases has been observed in epidemiological investigations of smelter workers

	exposed to high levels of airborne arsenic. A peripheral vascular disorder leading to gangrene of the extremities, known as blackfoot disease, has been observed. No deaths after acute Arsenic exposure have been reported via inhalation. Whereas, ingestion of large doses of As is reported to produce gastrointestinal problems, multiorgan failure, and death. Most of these symptoms have not been associated with acute inhalation of inorganic As. Arsenic dusts are reported cause irritation of the respiratory system (mucus membranes in throat and nose), which can lead to laryngitis, bronchitis, or rhinitis.
Lead (Pb), $\mu g/m^3$	Lead affects several physiological processes including the blood-forming, reproductive, **nervous and renal (kidney) systems**. Even low levels of lead exposure can increase blood pressure and permanently lower children's IQ. Higher levels can make any of us anemic -- damaging our red blood cells and sapping our energy. Long-term exposure of adults to lead at work has resulted in decreased performance in some tests that measure

	functions of the nervous system. Lead exposure may also cause weakness in fingers, wrists, or ankles.
Nickel (Ni), ng/m^3	Minor inhalation of Nickel (Ni) may cause dry sore throat, cough, dizziness and headache. The critical organ following inhalation exposure is the respiratory tract. After short-term high-dose inhalation exposure, lung irritation and pneumonia are critical effects. Sore throat, cough, chest tightness and dyspnoea occur within minutes, often associated with dizziness, nausea, headache and muscle cramps. A chemical pneumonitis may develop in severe cases, sometimes after a latent period of a few days. **Anorexia,** abdominal pain, jaundice and diarrhoea are also reported and rarely myocarditis, **delirium, convulsions or coma**. Death may occur due to pulmonary haemorrhage, pulmonary or cerebral oedema or toxic myocarditis. Death is not immediate and often, happened after few days.
Nitrogen Dioxide (NO2), µg/m^3	Nitrogen dioxide exposure can cause decrement in lung function (i.e. increased airway resistance), increased airway responsiveness to broncho-constrictions, change

	in lung volume, flow volume, characteristics of lung or airway resistance in healthy persons. It has been established that continuous exposure with as little as 0.1 ppm NO_2 over a period of one to three years, increases incidence of bronchitis, emphysema and have adverse effect on lung performance. Exposure to excessive NO2, affect the defence mechanism leaving the host susceptible to respiratory illness. bronchiolar and alveolar epithelium, inflammation of epithelium and definite emphysema.
Ozone (O3), µg/m3	Repeated exposure to ozone pollution may cause permanent damage to the lungs. Even when ozone is present in low levels, inhaling it triggers a variety of health problems including chest pain, coughing, nausea, throat irritation and congestion. It also worsens bronchitis, heart disease, emphysema, asthma and reduces lung capacity. Ozone can irritate respiratory system, causing coughing, feel an irritation in throat and/or experience an uncomfortable sensation in chest. It can reduce lung function and make it more difficult to breathe as deeply and vigorously as one normally would.

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	Ozone makes people more sensitive to allergens, which are the most common triggers for asthma attacks, thus it can aggravate asthma, when ambient ozone levels are high. Also, asthmatics are more severely affected by the reduced lung function and irritation in the respiratory system. Ozone can inflame and damage lung cells. Within few days of ozone exposure, the damaged cells are replaced and the old cells are shed. Ozone may aggravate chronic lung diseases such as emphysema and bronchitis and reduce the immune system's ability to fight off bacterial infections in the respiratory system.
Particulate Matter, (PM10 and PM2.5, $\mu g/m^3$)	Major concerns for human health from exposure to PM10 include effects on breathing, respiratory symptoms, decrease in pulmonary function and damage to lung, tissue cancer, and premature death. An increase of 10 $\mu g/m^3$ of PM10 levels resulted in a 3-6 % increase in visits for asthma and a 1-3 % increase in visits for upper respiratory diseases, but not with asthma. The short-term health effects are generated due to deposition of the larger size fraction (PM2.5-10) in the

	upper respiratory tract, which induces excess secretion of mucus as self-cleaning mechanism and thereby altering the lung function.
Sulphur Dioxide (SO2), g/m^3	Sulphur dioxide causes its irritant effects by stimulating nerves in the lining of the nose, throat and the lung airways. This later affects the people suffering from asthma and chronic lung disease, whose airways get inflamed and easily irritated. For long-term exposure, assessments examined were on the prevalence of respiratory symptoms, respiratory illness frequencies, or differences in lung function values in localities with contrasting concentrations of sulfur dioxide and particulate matter, largely in the coal-burning era.
Ammonia (NH3), g/m^3	Ammonia vapour is an irritant to the eyes and the respiratory tract. Damage to the bronchial epithelium and the alveolar membrane have been documented at high concentrations while severe acute over-exposure can lead

	to death within minutes. Ammonia in high concentrations (liquid or gas) will kill most organisms.

The Respondent No. 2 has duly identified 131 cities (123 non-attainment cities **exceeding National Ambient Air Quality Standards (NAAQS) consecutively for five years), which were notified to protect human health**). City Specific Clean Air Action Plans have been prepared and rolled out for implementation in 131 non-attainments and million plus cities. These plans target city specific air polluting sources like Soil & Road Dust, Vehicles, Domestic Fuel, MSW Burning, Construction Material and Industries with short-term priority action as well as those to be implemented in a medium to longer time frame along with the responsible agencies such as Urban Local Bodies, Traffic department, Police department, SPCB/PCC etc., as stakeholders.

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2. Furthermore, various steps have been undertaken by Govt. of India for reduction of air pollution and improvement of air quality in India. All efforts, beside lowering Particulate matter would also help in controlling hazardous pollutants like Arsenic (As), Nickel (Ni), Lead (Pb) and Benzo(a)Pyrene (BaP) as these are components of PM2.5. The steps undertaken by Govt. of India for reduction of air pollution and improvement of air quality in India has been elaborately explained and is annexed herewith as **Annexure-II**.

That in light of the above, it is respectfully submitted that, the issues raised in the present matter is O.A. No. 638 of 2023 It is respectfully prayed that this Answering Respondent No. 2 i.e. CPCB shall abide by any order or directions passed by the Hon'ble National Green Tribunal.

DEPONENT

NOTARY PUBLIC
R.L. Chaudhary
N.C.T. of Delhi
Regd. No. 1513
GOVT. OF INDIA

VERIFICATION

- 9 DEC 2023

Verified at New Delhi on this ..... day of December, 2023 that the contents of the above affidavit are true and correct to the best of my knowledge and belief and nothing has been concealed therein.

DEPONENT

ATTESTED
NOTARY PUBLIC
GOVT. OF INDIA

- 9 DEC 2023

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Annexure - I

रजिस्ट्री सं० डी० एल०-33004/99

REGD. NO. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

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No. 217] NEW DELHI, WEDNESDAY, NOVEMBER 18, 2009/KARTIKA 27, 1931

राष्ट्रीय परिवेशी वायु गुणवत्ता मानक
केन्द्रीय प्रदूषण नियंत्रण बोर्ड
अधिसूचना

नई दिल्ली, 18 नवम्बर, 2009

सं. बी-29016/20/90/पी.सी.आई.-I.—वायु (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1981 (1981 का 14) की धारा 16 की उपधारा (2) (एच) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए तथा अधिसूचना संख्या का.आ. 384(ई), दिनांक 11 अप्रैल, 1994 और का.आ. 935 (ई) दिनांक 14 अक्टूबर, 1998 के अधिक्रमण में केन्द्रीय प्रदूषण नियंत्रण बोर्ड इसके द्वारा तत्काल प्रभाव से राष्ट्रीय परिवेशी वायु गुणवत्ता मानक अधिसूचित करता है, जो इस प्रकार है:-

राष्ट्रीय परिवेशी वायु गुणवत्ता मानक

क्र. सं.	प्रदूषक	समय - आधारित औसत	परिवेशी वायु में सान्द्रण		
			औद्योगिक, शिल्पवसी, ग्रामीण और अन्य क्षेत्र	पारिस्थितिकी य संवेदनशील क्षेत्र (केन्द्र सरकार द्वारा अधिसूचित)	प्रबोधन की पद्धति
(1)	(2)	(3)	(4)	(5)	(6)
1	सल्फर डाई आक्साइड (SO_2), $\mu g/m^3$	वार्षिक*	50	20	-उन्नत वेस्ट और गाईक
		24 घंटे**	80	80	-पराबैगनी परिदीप्ती
2	नाइट्रोजन डाई आक्साइड (NO_2), $\mu g/m^3$	वार्षिक*	40	30	-उपांतरित जेकब और होचाइजर (सोडियम-आर्सेनाईट)
		24 घंटे**	80	80	-रासायनिक संदीप्ति
3	विविक्त पदार्थ (10माइक्रान से कम आकार)या PM_{10}. $\mu g/m^3$	वार्षिक*	60	60	-हरात्मक विश्लेषण
		24 घंटे**	100	100	-टोयम
					-बीटा तनुकरण पद्धति

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4	विविक्त पदार्थ (2.5 माइक्रान से कम आकार का $PM_{2.5}$, $\mu g/m^3$	वार्षिक* 24 घंटे**	40 60	40 60	-हरात्मक विश्लेषण -टोयम -बीटा तनुकरण पद्धति
5	ओजोन (O_3) $\mu g/m^3$	8 घंटे** 1 घंटा**	100 180	100 180	-पराबैगनी द्वीप्तिकाल -रासायनिक संदीप्ति -रासायनिक पद्धति
6	सीसा (Pb) $\mu g/m^3$	वार्षिक* 24 घंटे**	0.50 1.0	0.50 1.0	ई.पी.एम 2000 या समरूप फिल्टर पेपर का प्रयोग करके AAS/ICP पद्धति -टेफलॉन फिल्टर पेपर का प्रयोग करते हुए ED-XRF
7	कार्बन मोनोक्साइड (CO) mg/m^3	8 घंटे** 1 घंटा**	02 04	02 04	-अवरक्त अवशोषी अवरक्त (NDIR) स्पैक्ट्रम मापन
8	अमोनिया (NH_3) $\mu g/m^3$	वार्षिक* 24 घंटे**	100 400	100 400	-रासायनिक संदीप्ती -इण्डोफिनॉल ब्लू पद्धति
9	बैन्जीन (C_6H_6) $\mu g/m^3$	वार्षिक*	05	05	- गैस क्रोमेटोग्राफी आधारित सतत् विश्लेषक -अधिशोषण तथा निशोषण के बाद गैस क्रोमेटोग्राफी
10	बैन्जो (ए) पाईरीन (BaP) केवल विविक्त कण, ng/m^3	वार्षिक*	01	01	-विलायक निष्कर्षण के बाद HPLC/GC द्वारा विश्लेषण
11	आर्सेनिक (As) ng/m^3	वार्षिक*	06	06	-असंवितरक अवरक्त स्पैक्ट्रामिती ई.पी.एम. 2000 या समरूप फिल्टर पेपर का प्रयोग करके ICP/AAS पद्धति
12	निकिल (Ni) ng/m^3	वार्षिक*	20	20	ई.पी.एम. 2000 या समरूप फिल्टर पेपर का प्रयोग करके ICP/AAS पद्धति

* वर्ष में एक समान अंतरालों पर सप्ताह में दो बार प्रति 24 घंटे तक किसी एक स्थान विशेष पर लिये गये न्यूनतम 104 मापों का वार्षिक अंकगणीतीय औसत ।

** वर्ष में 98 प्रतिशत समय पर 24 घंटे या 8 घंटे या 1 घंटा के मानीटर मापमान, जो लागू हो , अनुपालन किये जाएंगे । दो प्रतिशत समय पर यह मापमान अधिक हो सकता है, किन्तु क्रमिक दो मानीटर करने के दिनों पर नहीं ।

टिप्पणी:

1. जब कभी और जहां भी किसी अपने-अपने प्रवर्ग के लिये दो क्रमिक प्रबोधन दिनों पर मापित मूल्य, उक्त विनिर्दिष्ट सीमा से अधिक हो तो इसे नियमित या निरंतर प्रबोधन तथा अतिरिक्त अन्वेषण करवाने के लिये पर्याप्त कारण समझा जायेगा ।

संत प्रसाद गौतम, अध्यक्ष

[विज्ञापन-III/4/184/09/असा.]

टिप्पणी: राष्ट्रीय परिवेशी वायु गुणवत्ता मानक संबंधी अधिसूचनाएँ, केन्द्रीय प्रदूषण नियंत्रण बोर्ड द्वारा भारत के राजपत्र असाधारण में अधिसूचना संख्या का.आ. 384 (ई), दिनांक 11 अप्रैल, 1994 एवं का. आ. 935 (ई), दिनांक 14 अक्टूबर, 1998 द्वारा प्रकाशित की गयी थी ।

NATIONAL AMBIENT AIR QUALITY STANDARDS
CENTRAL POLLUTION CONTROL BOARD
NOTIFICATION

New Delhi, the 18th November, 2009

No. B-29016/20/90/PCI-L—In exercise of the powers conferred by Sub-section (2) (h) of section 16 of the Air (Prevention and Control of Pollution) Act, 1981 (Act No.14 of 1981), and in supersession of the Notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October, 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards with immediate effect, namely:-

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO_2), $\mu g/m^3$	Annual*	50	20	- Improved West and Gaeke
		24 hours**	80	80	-Ultraviolet fluorescence
2	Nitrogen Dioxide (NO_2), $\mu g/m^3$	Annual*	40	30	- Modified Jacob & Hochheiser (Na-Arsenite)
		24 hours**	80	80	- Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM_{10} $\mu g/m^3$	Annual*	60	60	- Gravimetric - TOEM
		24 hours**	100	100	- Beta attenuation
4	Particulate Matter (size less than 2.5µm) or $PM_{2.5}$ $\mu g/m^3$	Annual*	40	40	- Gravimetric - TOEM
		24 hours**	60	60	- Beta attenuation
5	Ozone (O_3) $\mu g/m^3$	8 hours**	100	100	- UV photometric - Chemilminescence
		1 hour**	180	180	- Chemical Method
6	Lead (Pb) $\mu g/m^3$	Annual*	0.50	0.50	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon filter
		24 hours**	1.0	1.0	
7	Carbon Monoxide (CO) mg/m^3	8 hours**	02	02	- Non Dispersive Infra Red (NDIR) spectroscopy
		1 hour**	04	04	
8	Ammonia (NH_3) $\mu g/m^3$	Annual*	100	100	-Chemiluminescence
		24 hours**	400	400	-Indophenol blue method

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(1)	(2)	(3)	(4)	(5)	(6)
9	Benzene (C_6H_6) $\mu g/m^3$	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m^3	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m^3	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m^3	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note. — Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

SANT PRASAD GAUTAM, Chairman
[ADVT-III/4/184/09/Exty.]

Note: The notifications on National Ambient Air Quality Standards were published by the Central Pollution Control Board in the Gazette of India, Extraordinary vide notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October, 1998.

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Annexure - II

ACTIONS TAKEN BY THE CENTRAL GOVERNMENT:

List of Steps taken for improvement of air quality

ACTIONS TAKEN BY THE CENTRAL GOVERNMENT

1.0 National Clean Air Programme:

- National Clean Air Programme (NCAP) has been launched by Ministry of Environment, Forest and Climate Change (MoEFCC) in January 2019 with an aim to improve air quality in 131 cities (non-attainment cities and Million Plus Cities) in 24 States by engaging all stakeholders.
- NCAP envisages reduction by 20-30% in PM 10 concentration over baseline in year 2017 by 2024. Target has been revised to achieve reduction in PM10 level up to 40% or achievement of national standards (60 $\mu g/m^3$) by 2025-26.
- City Action Plans (CAPs) have been prepared by all 131 cities and being implemented by Urban Local Bodies.
- The city specific clean air action plans target city specific air polluting sources like Soil & Road Dust, Vehicles, Domestic Fuel, MSW Burning, Construction Material and **Industries**
- Performance based financial support is being provided to these131 cities for implementation of activities of City Action Plan.
- Further, funding for implementation of CAPs is being mobilised through convergence of resources from various schemes of Central Government such as Swachh Bharat Mission SBM (Urban), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Smart City Mission, Sustainable Alternative towards Affordable Transportation (SATAT), Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME-II), Nagar Van Yojna, etc. and resources from State/UT Governments and its agencies such as Municipal Corporation, Urban Development authorities and Industrial development authorities etc.
- Public Grievance Redressal Portal (PGRP)/helpline have been developed by all 131 cities to address public complaints of air pollution in timely manner.
- Emergency Response System (ERS/ GRAP) have been developed by all 131cities for taking action in air emergencies
- 88 cities out of 131 cities have shown improvement in air quality in terms of annual PM10 concentrations in FY 2022-23 with respect to the baseline of FY 2017-18.

2.0 Measures for control of vehicular emissions:

- **Leapfrogging from BS-IV to BS-VI fuel standards** since 1st April, 2018 in NCT of Delhi and from 1st April, 2020 for the rest of the country.

- **RFID (radio-frequency identity)** system implemented by South Delhi Municipal Corporation (SDMC) for collection of toll and Environment Compensation Charges from commercial vehicles entering Delhi.
- Introduction of **BS VI compliant vehicles** across the country since April, 2020.
- Department of Heavy Industry is providing subsidy on e-vehicles under **Faster Adoption and Manufacture of (Hybrid &) Electric Vehicles in India (FAME -II India)** scheme.
- **Sustainable Alternative Towards Affordable Transportation (SATAT)** has been launched as an initiative to set up Compressed Bio-Gas (CBG) production plants and make CBG available in the market for use in automotive fuels.
- Operationalization of Expressways & Highways to divert non-destined traffic

3.0 Measures for control of industrial emission:

- **Notification regarding SO_2 and NOx emission standards** have been issued for Thermal Power Plants on 05/9/2022
- **Ban on use of pet coke and furnace oil** as fuel in NCR States since October 24, 2017 and ban on use of imported pet coke in the country since July 26, 2018, with exception for use in permitted processes.

4.0 Measures for control of emissions from Stubble Burning:

- Under Central Sector Scheme on 'Promotion of Agricultural Mechanization for in-situ management of Crop Residue in the States of Punjab, Haryana, Uttar Pradesh and NCT of Delhi', agricultural machines and equipment for in-situ crop residue management are promoted with 50% subsidy to the individual farmers and 80% subsidy for establishment of Custom Hiring Centers. In 2022, the Scheme has been merged with Sub-Mission on Agricultural Mechanization (SMAM) and SMAM has been merged with Rashtriya Krishi Vikas Yojana (RKVY).
- The Commission for Air Quality Management in NCR and Adjoining Areas (CAQM) on 17.09.2021 directed the coal-based Thermal Power plants situated up to a radius of 300 Km of Delhi to co-fire biomass based Pellets, Torrefied Pellets/Briquettes (with focus on paddy straw) with Coal (up to 5-10%).
- Coal based captive Thermal Power Plants in NCR and adjoining areas directed to co-fire at least 5% biomass pellets by 30.09.2023 and at least 10% biomass pellets by 31.12.2023.

Actions taken by Central Pollution Control Board (CPCB)

1.0 Air Quality Monitoring and Network

- **National Air Quality Index (AQI)** was launched in 2015. Information is being disseminated to public through daily air quality bulletins.
- **Ambient Air Quality Network**: The country has a network of 1447 ambient air quality monitoring stations (516 continuous and 931 manual) covering 516 cities in 28 states and 7 UTs.

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- **A Central Control Room** is operated by Central Pollution Control Board wherein, hour to hour tracking of various information such as **PM concentrations, Live Air Quality Data of Monitoring stations, Live Air Quality Index is available. Further, Air Quality Forecast is also available for Delhi-NCR**.
- AQI is monitored along with other parameters and is published on the website in the form of **AQI Bulletin** after analysis. The links for the same have been made available to CAQM for consideration and deciding on urgent actions for control of pollution in Delhi-NCR.

2.0 Measures for control of vehicular refueling emissions

- Installation of Vapour Recovery System (VRS) in new and existing petrol pumps selling gasoline >100kl per month in million plus cities and those selling >300kl per month in cities with population between 1 lakh to 1 million.
- Directions issued to M/s IOCL, M/s BPCL, M/s HPCL, M/s RIL, M/s Shell and M/s Nayara for installation of VRS as per above mentioned criteria

3.0 Measures for control of industrial emission

- For strengthening monitoring mechanism and effective compliance through self-regulatory mechanism, CPCB directed all 17 categories of highly polluting industries to istall OCEMS. There are 4,315 units under 17 categories of industries, out of which 3,734 units have installed OCEMS and closure directions are still in-force for 581 units.
- The Ministry of Environment Forest and Climate Change (MoEF&CC), Government of India notifies industry specific discharge standards under Schedule-I: 'Standards for Emission or Discharge of Environmental Pollutants from various Industries' of Environment Protection Act, 1986. So far, industry specific environmental standards, for 79 industrial sectors (including emission standards for 56 sectors) have been notified. Industrial sectors, for which specific standards are not available, general standards as notified under Schedule-VI of Environment Protection Rules, 1986 shall be applicable.
- Installation of **Online Continuous Emission Monitoring System (OCEMS) in red category air polluting industries** in Delhi-NCR
- Industrial units in Delhi have shifted to PNG/cleaner fuels and, operational units in NCR have shifted to PNG/Biomass.
- Shifting of all operational **brick kilns to zig-zag technology** in Delhi and NCR.
- CPCB has come out with System and Procedure for Emission Compliance Testing of Retro-fit Emission Control Devices (RECD) for Diesel Power Generating Set Engines up to Gross Mechanical Power 800 kW.

4.0 Measures for Control of Emissions from Stubble Burning

- MoA&FW in 2018 launched scheme for providing subsidy for purchase of crop residue management machinery and establishment of custom hiring centres (CHCs) in NCT of Delhi and the States of Punjab, Haryana and Uttar Pradesh. During 2018-2022, total fund released to Delhi and other states under the said scheme is Rs. 2440.07 crores

using which, over 2 lakh crop residue machineries have been delivered to individual farmers and CHCs, and over 39,000 CHCs have been established.

- CPCB has framed guidelines for providing one time financial assistance for setting up of paddy straw based pelletization and Torrefaction plants which may help in addressing the supply chain issues and the issue of open burning of paddy straw in agriculture fields in Northern Region. A maximum amount of Rs. 28 lakhs or 40% of the capital cost considered for plant and machinery of a 1 TPH pellitisation plant, whichever is lower, shall be given as onetime financial support by CPCB, subject to a maximum total financial support of Rs. 1.4 crore per proposal. Similarly, a maximum amount of Rs. 56 lakhs or 40% of the capital cost considered for plant and machinery of a 1 TPH torrefaction plant, whichever is lower, shall be given as onetime financial support by CPCB, subject to a maximum total financial support of Rs. 2.8 crore per proposal. A corpus of Rs. 50 crores have been earmarked for utilisation through the guidelines. A total of 10 plants have been approved so far by CPCB (8 in Punjab, 1 in Haryana and 1 in UP).
- CPCB has also issued an addendum to the guidelines under which one-time financial assistance is provided to Municipal Corporations, Municipal Councils and Zilla Parishads of the states of Punjab, Haryana, NCT of Delhi and NCR districts of Uttar Pradesh and Rajasthan, for establishing paddy straw based briquetting plants for use of briquettes for cremation purpose only.
- Directions issued by CAQM to State governments of Punjab, Haryana and Uttar Pradesh to strictly and effectively implement framework and revised action plan to eliminate and control stubble burning.
- From 10.11.2023 onwards, 33 scientists of CPCB were deployed as flying squads for assisting the Commission for Air Quality Management in National Capital Region and Adjoining Areas (CAQM) for intensifying monitoring and enforcement actions towards prevention of paddy stubble burning incidents in 22 districts of Punjab and 11 districts of Haryana. The flying squads are coordinating with the state Government/ nodal officers/ officers from respective Pollution Control Boards towards prevention and control of stubble burning in their respective districts and sending their daily reports to CAQM. All teams have been recently recalled in view of paddy harvesting season coming to an end.

5.0 MSW and C&D Waste:

- CPCB published guidelines (available on

    1. Environmental Management of Construction & Demolition (C & D) Wastes' in March, 2017
    2. 'Guidelines on DUST Mitigation Measures in Handling Construction Material & C&D Wastes' in November 2017.
    3. Disposal of legacy waste by bio-mining and bio-remediation to address open burning and landfill fires

- CPCB has issued direction to all SPCBs/ PCCs for deployment of Anti-Smog Gun and implementation of adequate dust mitigation measures at construction projects/ sites having area more than 20,000 sq. meters.

- CPCB has issued directions under Section 5 of E(P) Act to all SPCBs/PCCs for implementation of SWM Rules, 2016 with reference to fire incidents at MSW dumpsites.
- All these guidelines and Directions are available on CPCB website to be implemented by SPCBs/PCCs

6.0 Technical Interventions

- Research projects are being carried out by CPCB in collaboration with premier institutions like IIT, NEERI, etc. under Environment Protection Charge (EPC) funds which provide scientific inputs for taking focused action towards improvement in air quality of Delhi NCR. Based on the results of one such project, advisory has been issued to State Boards to use **dust suppressant,** along with water to control dust at unpaved roads, roads with heavy traffic and construction sites, as about 30% reduction in dust concentration was observed up to 6 hours after application of dust suppressant.
- CPCB issues a daily report comprising of AQI of Delhi and NCR towns, comparative AQI status, year-wise trends of PM concentration, hotspots for the day, AFE counts, contribution of stubble burning and meteorological forecast. This report is prepared based on the inputs available from various sources such as IMD, SAFAR, IARI, etc., and disseminated through CPCB website.

6.0 Close Monitoring & Ground level implementation

- Central Pollution Control Board has been continuously deploying **dedicated CPCB's teams on the field during the winter season** from 2017 onwards to check on-ground scenario of air pollution related activities and refer these to implementing agencies for necessary action.
- 03.12.2021 onwards **40 officers of CPCB have been deployed as flying squads**, for conducting incognito inspection of industries, construction sites etc. in various areas of Delhi NCR. Based on CPCB reports, further action is taken by Commission on Air Quality Management in National Capital Region and Adjoining areas (CAQM) including issuance of closure directions.

7.0 Regular Stakeholder Consultation, Public & Media Outreach

- Continuous interactions and coordination with government bodies, public agencies, urban local bodies for assessment of mitigation measures and to combat air pollution through review meetings for air quality management in Delhi-NCR. 41 review meetings convened as on date.
- **Twitter and Facebook accounts have been created for public outreach and complaint redressal** is closely monitoring the complaints on SAMEER app and social media platforms (Twitter & Facebook). Sameer and social media complaints are resolved through enforcement agencies and redressal status are being shared with respective agencies.
- **Dedicated media corner** on CPCB website informs latest developments and actions taken.

8.0 Regulatory Actions

- Directions prescribing measures for control of pollution from various sources such as implementation of RECD system/ dual fuel kits in DG sets, use of cleaner fuels in industries, shift to EV/ CNG/ BS VI diesel fuel in transport sector, implementation of dust control measures at C&D sites etc., have been issued by CAQM, wherein CPCB is also a member and provided technical inputs to CAQM. Further, policy to curb air pollution in NCR has also been formulated.
- **Graded Response Action Plan (GRAP) was prepared for implementation under different Air Quality Index (AQI) categories** in pursuant to the Hon'ble Supreme Court's Order dated December 02, 2016.
- CPCB prepared a revised GRAP, based on which, a revised GRAP has been published by CAQM on 05.08.2022, which has come into effect from 01.10.2022. GRAP revised again on 06.10.2023. CPCB is also a member of the sub-committee responsible for invoking various provisions under GRAP.

10.0 Other actions

- In order to control road dust emissions, CPCB is funding NCR ULBs for construction/repair of roads and procurement of anti-smog guns and Mechanical road sweepers under EPC funds. Total 8 roads worth Rs 15.6 cr sanctioned to Ghaziabad Municipal corporation. Work has been awarded for all 08 roads and 6.6 crore released for the said purpose. 18 road works/paving works proposals from MCD sanctioned at a cost of Rs. 10 crore. Besides, proposals of ~Rs. 24 crore for procurement of MRSMs and Anti-smog guns have been sanctioned to four agencies (NDMC, GMC, MCF and Noida Authority).
- In order to control DG set emissions, CPCB is funding retrofitment/ upgradation of DG sets in Govt. hospitals in Delhi-NCR under EPC funds.

Annexure - III

Item No. 05 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Original Application No. 638/2023

In re: News item appearing in Times of India dated 10.10.2023 titled **"Feeling anxious? Toxic air could be to blame"**

Date of hearing: 31.10.2023

CORAM: HON'BLE MR. JUSTICE PRAKASH SHRIVASTAVA, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE DR. A. SENTHIL VEL, EXPERT MEMBER

Respondent: Mr. Avinash Sharma, Adv. for MoEF & CC
Mr. Amit Singh Chauhan, Adv. for CPCB (Through VC)

ORDER

1. This OA is registered in *suo motu* exercise of power on the basis of a news item titled **"Feeling anxious? Toxic air could be to blame"** published in 'The Times of India' dated 10.10.2023. As per the said news item, long term exposure to air pollution could lead to higher risk of depression and anxiety besides respiratory disorder. As per the news report, people who breathe in polluted air experience changes within the brain that control the emotions and as a result their chances of developing anxiety, depression, etc. are increased. The news item contains the following studies in this regard:

> *"**HAVING A BAD -AIR DAY?***
>
> - *A study from researchers at Harvard, published in March 2023, adds to the evidence connecting exposure to air pollution (small particulate matter (PM2.5), nitrogen oxide and nitrogen dioxide) to increased risk of dementia.*
> - *A study published in journal Neuro Toxicology reveals that people who breathe polluted air are more likely to develop mental health problems than those who breathe clean air.*

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- *Some researchers have associated air pollution with higher levels of stress, psychological distress, increased risk of dementia and Alzheimer's and depression.*

- *A study published in Environmental Health Perspectives found an association between short-term exposure to elevated levels of air pollution and increased emergency room psychiatric visits among children."*

2. Hence, the issue which needs to be examined in this OA is in respect of various chemical and physical components causing air pollution and adverse effect of each of such physical and chemical component on different organs of human body. Adequate measures are required for control of such air polluting components and their adverse effect on various organs of human body, especially those which are affecting the brain and emotional, psychological aspect.

3. The Tribunal in OA No. 663/2023, by order dated 20.10.2023, in *suo motu* exercise of power has taken up the larger issue relating to the air pollution and the dip in the quality of air in Delhi but, the specific issue noted above needs to be examined separately. Hence, this OA is registered in *suo motu* exercise of power which is permissible in terms of the judgment of Hon'ble Supreme Court in the matter of *"Municipal Corporation of Greater Mumbai vs. Ankita Sinha & Ors." reported in 2021 SCC Online SC 897.*

4. Having regard to the issue involved, we deem it proper to implead the following authorities as respondents in this application:

i. Ministry of Environment, Forest and Climate Change, through its Secretary.

ii. Central Pollution Control Board, through its Member Secretary.

iii. Director, General, Indian Council of Medical Research.

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iv. Director, All India Institute of Medical Sciences.

v. Secretary, Ministry of Health, Govt. of NCT of Delhi.

5. Let notice be issued to the above respondents by the Registry.

6. The reply be filed by the said respondents on or before the next date of hearing.

7. List on 11.12.2023.

Prakash Shrivastava, CP

Sudhir Agarwal, JM

Dr. A. Senthil Vel, EM

October 31, 2023
Original Application No. 638/2023
DV