

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI
Original Application No. 1233 of 2024**

In the matter of:

News Item titled "Heavy metals in PM 2.5 New Study reveals air quality concerns in East Delhi" appearing in the Times of India dated 29.09.2024

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**Filed by Adv. Amit Singh Chauhan
On behalf of Central Pollution Control Board**

**Place: Delhi
Dated:14.05.2025**

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI
Original Application No. 1233 of 2024**

In the matter of:

News Item titled "Heavy metals in PM 2.5 New Study reveals air quality concerns in East Delhi" appearing in the Times of India dated 29.09.2024

**REPLY AFFIDAVIT ON BEHALF OF RESPONDENT NO. 3
CENTRAL POLLUTION CONTROL BOARD (CPCB) IN
PURSUANT TO ORDER DATED 06.02.2025 PASSED BY THIS
HON'BLE TRIBUNAL.**

MOST RESPECTFULLY SHOWETH:

1. That this Hon'ble Tribunal has taken up Suo Motu cognizance in the instant matter which is based on the news item titled "*Heavy metals in PM 2.5 New Study reveals air quality concerns in East Delhi*" appearing in the Times of India dated 29.09.2024"

2. That the Hon'ble NGT (PB) in the matter of OA No. 1233 of 2024 titled "News Item titled "*Heavy metals in PM_{2.5} New Study reveals air quality concerns in East Delhi*" appearing in the Times of India dated 29.09.2024", issued an order dated 06.02.2025, wherein para no. 2 inter alia states that:

Respondent No. 3, CPCB has filed the reply, but has not clearly reflected upon the monitoring of the aforesaid heavy metals, i.e.,



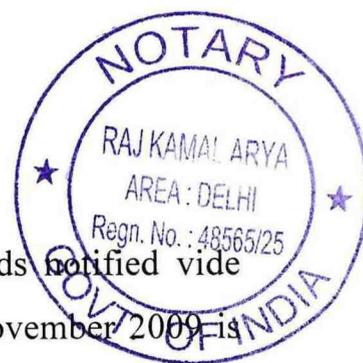
14 MAY 2025

chromium, copper, zinc and molybdenum nor giving any reasons for not monitoring. Same is the position in respect of the reply of PPCB.

3. Therefore, in pursuance to this Order dated 06.02.2025, the Respondent CPCB herein humbly submits as follows-

- a. That the National Ambient Air Quality Standards (NAAQS) notified under the Environment (Protection) Act, 1986, 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 which are-
 - i. Sulphur Dioxide (SO₂),
 - ii. Nitrogen Dioxide (NO₂),
 - iii. PM₁₀,
 - iv. PM_{2.5},
 - v. Ozone (O₃),
 - vi. Lead (Pb),
 - vii. Carbon Monoxide (CO),
 - viii. Ammonia (NH₃),
 - ix. Benzene (C₆H₆),
 - x. Benzo(a) Pyrene (BaP),
 - xi. Arsenic (As) and
 - xii. Nickel (Ni)).

A Copy of National Ambient Air Quality Standards notified vide Notification No. B-29016/20/90/PCI-I dated 18th November 2009 is enclosed at **Annexure-I**.



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- b. That the methods for monitoring air pollutants have also been stipulated under NAAQS. That the monitoring of notified air pollutants is conducted through Manual and Continuous Ambient Air Quality Monitoring Stations (CAAQMS).
- c. That the heavy metals i.e., Chromium, Copper, Zinc, and Molybdenum, are not included among notified parameters under the NAAQS and, therefore, are not monitored in ambient air through the ambient air quality monitoring network.
- d. It is humbly submitted that, countries/agencies such as United States Environment protection Agency (USEPA), the European Union (EU), Mexico, Canada, Brazil, Australia and Japan and World Health Organization (WHO) have not proposed standards / guideline level for Chromium, Copper, Zinc and Molybdenum.
- e. That the metal parameters mentioned in the ambient air quality standards / guideline level prescribed by various agencies/countries, are tabulated in Table 1.

Table 1: Metal parameters mentioned in the ambient air quality standards / guideline level prescribed by various agencies/countries.

Sr. No.	Country/Agency	Metal Parameters
1.	India	Lead (Pb), Arsenic (As) and Nickel (Ni).
2.	World Health Organisation (WHO) - Global Air Quality Guidelines-2021	None



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3.	U.S. Environmental Protection Agency (US EPA)	Lead (Pb)
4.	European Union (EU)	Lead (Pb), Arsenic (As), Nickel (Ni), and Cadmium (Cd)
5.	Japan	None
6.	Australia	Lead (Pb)
7.	Brazil	Lead (Pb)
8.	Canada	Lead (Pb)
9.	Mexico	Lead (Pb)

f. The mean values of the metals, Zn, Cu, Mo and Cr reported in the study referred in the news article (*Lal et al. 2024, <https://doi.org/10.1080/00207233.2024.2405443>*) ranged from 119.9 to 1364.5 ng/m³, 112.8 to 1614.5 ng/m³, 40.6 to 376.3 ng/m³ and 68.7 to 244.4 ng/m³ respectively. The reported values have high variation e.g., Zn (379.3 ± 1094.2 ng/m³, 1364.5 ± 2205.3 ng/m³), Cu (426.0 ± 771.6 ng/m³, 1614.5 ± 2304.9 ng/m³), Mo (123.0 ± 306.3 ng/m³, 376.3 ± 563.1 ng/m³) expressed in mean ± standard deviation.

g. Further, it is humbly submitted that as per the information available at URL: <https://www.ontario.ca/page/ontarios-ambient-air-quality-criteria>, the Ontario Ministry of the Environment (MOE), Canada, has developed the Ambient Air Quality Criteria (AAQC) which are most commonly used in environmental assessments, special studies using ambient air monitoring data, assessment of general air quality in a community and annual reporting on air quality in Canada.

The AAQC is not a regulatory value, however, it is a concentration of a contaminant in air that is protective against adverse effects on health and/or the environment. AAQCs are used to assess general (ambient) air quality



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resulting from all sources of a contaminant to air. The AAQC values for Zn, Cu, Mo and Cr are tabulated in Table 2:

Table 2: AAQC values for Zn, Cu, Mo, and Cr laid by Ontario Ministry of the Environment (MOE)

Sr. No.	Metal	AAQC(($\mu\text{g}/\text{m}^3$))	Averaging Time
1.	Zinc	120	24-Hour
2.	Copper	50	24-Hour
3.	Molybdenum	120	24-Hour
4.	Chromium		
a.	Chromium compounds (metallic, divalent and trivalent forms)	0.5	24-Hour
b.	Chromium compounds (hexavalent forms; CrVI)	0.00007	Annual
Note: $1 \mu\text{g}/\text{m}^3 = 1000 \text{ ng}/\text{m}^3$			

Source: Human Toxicology and Air Standards Section, Technical Assessment and Standards Development Branch, Ontario Ministry of the Environment, Conservation and Parks (MECP). 2020. Ambient Air Quality Criteria. MECP, Toronto, ON, Canada.

4. In view of above, it is humbly submitted that the findings of study referred in the news article (*Lal et al. 2024, <https://doi.org/10.1080/00207233.2024.2405443>*) are showing indicative presence of metals (Zn, Cu, Mo and Cr) in ambient air.

5. That the answering respondent no. 3 craves leave of this Hon'ble Tribunal to file further reply, if required, in the future.



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6. That, in the light of the above submissions, it is respectfully submitted that this Answering Respondent, i.e., CPCB, shall abide by any order(s) or direction(s) passed by this Hon'ble Court in the instant OA.



(Aditya Sharma)

Scientist 'E'

Central Pollution Control Board



14 MAY 2025

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PRINCIPAL BENCH, NEW DELHI
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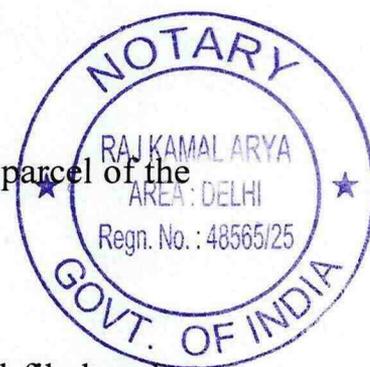
AFFIDAVIT

I, **Aditya Sharma** working as Scientist 'E' in Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, Delhi, the Respondent No. 3 in the above matter, do hereby solemnly affirm, declare on oath and state as under: -

1. That I, the deponent herein is authorized representative to represent the Respondent CPCB in the present case, and as such, I am well conversant with the facts and circumstances of the present case on the basis of the information derived from the official records, and hence, I am competent and authorized to verify, sign and swear this affidavit on behalf of the Respondent CPCB.

2. That the accompanying reply may be read part and parcel of the present affidavit.

3. That the accompanying reply has been drafted and filed under my instructions and authority the contents thereof are true and correct on the basis of the record maintained during ordinary course of business of CPCB and available records and documents and the



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contents of the same are read over and explained to me and are not repeated herein for the sake of brevity.



DEPONENT

आदित्य शर्मा / Aditya Sharma

वैज्ञानिक "ई" / Scientist "E"

केन्द्रीय प्रदूषण नियंत्रण बोर्ड

Central Pollution Control Board

पर्यावरण, वन एवं जलवायु परिवर्तन विभाग, भारत सरकार

Min. Env. Forest & Climate Change, Govt. of India

परिवेश भवन, पूर्वी अर्जुन नगर

Parvesh Bhawan, East Arjun Nagar

दिल्ली / Delhi-110032

VERIFICATION

Verified at New Delhi on this day of 14 MAY 2025 that the contents of the above reply are correct and true on the basis of the records of the case as mentioned in the day-to-day affairs of the CPCB. Nothing has been concealed therefrom or mis- stated.



DEPONENT

आदित्य शर्मा / Aditya Sharma

वैज्ञानिक "ई" / Scientist "E"

केन्द्रीय प्रदूषण नियंत्रण बोर्ड

Central Pollution Control Board

पर्यावरण, वन एवं जलवायु परिवर्तन विभाग, भारत सरकार

Min. Env. Forest & Climate Change, Govt. of India

परिवेश भवन, पूर्वी अर्जुन नगर

Parvesh Bhawan, East Arjun Nagar

दिल्ली / Delhi-110032



ATTESTED

NOTARY PUBLIC, DELHI
GOVT. OF INDIA

14 MAY 2025

रजिस्ट्री सं० डी० एल०-33004/99

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


भारत का राजपत्र
The Gazette of India

असाधारण

EXTRAORDINARY

भाग III—खण्ड 4

PART III—Section 4

प्राधिकार से प्रकाशित

PUBLISHED BY AUTHORITY

सं. 217]

नई दिल्ली, बुधवार, नवम्बर 18, 2009/कार्तिक 27, 1931

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. डी-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, रिहायशी, प्राणीय और अन्य क्षेत्र	पारिस्थितिकीय संवेदनशील क्षेत्र (केन्द्र सरकार द्वारा अधिसूचित)	प्रबोधन की पद्धति
(1)	(2)	(3)	(4)	(5)	(6)
1	सल्फर डाई आक्साइड (SO ₂), µg/m ³	वार्षिक* 24 घंटे**	50 80	20 80	-उन्नत वेस्ट और गार्डक -परावैगनी परिसीप्टी
2	नाइट्रोजन डाई आक्साइड (NO ₂), µg/m ³	वार्षिक* 24 घंटे**	40 80	30 80	-उपांतरित जेकब और हॉचाइजर (सोडियम-आर्सेनाइट) -रासायनिक संदीप्ति
3	विविक्त पदार्थ (10माइक्रान से कम आकार)या PM ₁₀ , µg/m ³	वार्षिक* 24 घंटे**	60 100	60 100	-हस्तात्मिक विश्लेषण -टोयम -बीटा तनुकरण पद्धति

4187 GI/2009

(1)

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4	विविक्त पदार्थ (2.5 माइक्रान से कम आकार या $PM_{2.5}$, $\mu g/m^3$)	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	-अविपेक्षी अवरक्त (NDIR) स्पेक्ट्रम मापन
8	अमोनिया (NH_3) $\mu g/m^3$	वार्षिक* 24 घंटे**	100 400	100 400	-रासायनिक संदीप्ति -इण्डोफिनॉल ब्ल्यू पद्धति
9	बैन्जीन (C_6H_6) $\mu g/m^3$	वार्षिक*	05	05	- गैस क्रोमेटोग्राफी आधारित सतत विश्लेषक -अधिशोषण तथा निशोषण के बाद गैस क्रोमेटोग्राफी
10	बेन्जो (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 स्पेक्ट्रोमिती 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 कये 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, ऊपर 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/असल.]

टिप्पणी: राष्ट्रीय परिवेशी वायु गुणवत्ता मानक संबंधी अधिसूचनाएँ, केन्द्रीय प्रदूषण नियंत्रण बोर्ड द्वारा भारत के राजपत्र आसाधरण 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-I.—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), µg/m ³	Annual* 24 hours**	50 80	20 80	- Improved West and Gaeke -Ultraviolet fluorescence
2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual* 24 hours**	40 80	30 80	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM ₁₀ µg/m ³	Annual* 24 hours**	60 100	60 100	- Gravimetric - TOEM - Beta attenuation
4	Particulate Matter (size less than 2.5µm) or PM _{2.5} µg/m ³	Annual* 24 hours**	40 60	40 60	- Gravimetric - TOEM - Beta attenuation
5	Ozone (O ₃) µg/m ³	8 hours** 1 hour**	100 180	100 180	- UV photometric - Chemiluminescence - Chemical Method
6	Lead (Pb) µg/m ³	Annual* 24 hours**	0.50 1.0	0.50 1.0	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon filter
7	Carbon Monoxide (CO) mg/m ³	8 hours** 1 hour**	02 04	02 04	- Non Dispersive Infra Red (NDIR) spectroscopy
8	Ammonia (NH ₃) µg/m ³	Annual* 24 hours**	100 400	100 400	-Chemiluminescence -Indophenol blue method

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(1)	(2)	(3)	(4)	(5)	(6)
9	Benzene (C ₆ H ₆) µg/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.