

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

I.A. No. ~~3000~~ 340 Of 2020

In

Original Application No.1016 Of 2019

In the matter of:-

Utkarsh Panwar

.....Applicant

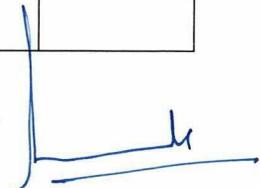
Versus

Central Pollution Control Board & Ors

.....Respondent(s)

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(S.K. Gupta)

Scientist 'E'

**Central Pollution Control Board
Parivesh Bhawan, East Arjun Nagar
Delhi-110032.**

Place: Delhi

Dated:13.10.2020

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

Principal Bench, New Delhi

I. A. No. 340.....of 2020

In

O.A. No. 1016 of 2019

IN THE MATTER OF:

Utkash Panwar

.....Applicant

Versus

Central Pollution Control Board and Ors.

.....Respondents

**Reply on Behalf of, Central Pollution Control Board to the I.A. Filed by the
applicant**

PARAWISE REPLY:

- 1.** That the averments contained in **para-1 to 5**, are matter of record and needs no comments from this answering respondent i.e. Central Pollution Control Board (CPCB).
- 2.** That in reply to the averments contained in **para-6**, CPCB submits that based on the data provided by respective state pollution control boards, total number of brick kilns in NCR is 4635 and out of which number of brick kilns converted into zig-zag technology in NCR is 2697 (1543 in Haryana, 1024 in Uttar Pradesh and 130 in Rajasthan).
- 3.** That the averments contained in **para-7 to 14**, are matter of record and needs no comments from this answering respondent i.e. Central Pollution Control Board (CPCB).
- 4.** That in reply to the averments contained in **para-15**, CPCB submits that CPCB has referred the relevant part of above mentioned report of Automotive Research Association of India and the Energy and Resources Institute, in the report filed before Hon'ble NGT.

5. That the averments contained in **para-16 to 20** are matter of record and needs no comments from this answering respondent i.e. Central Pollution Control Board (CPCB).
6. That in reply to the averments contained in **para-21**, answering respondent submits that CPCB has filed the report in compliance of the orders of Hon'ble NGT dated 17/03/2020 w.r.t. how brick kilns can be allowed in NCR without damage to the air quality; conditions subject to which it may be done; number of brick kilns to be allowed and criteria for fixing such numbers. The matter is under consideration with Hon'ble NGT.
7. That the averments contained in **para-22**, are matter of record and needs no comments from this answering respondent i.e. Central Pollution Control Board (CPCB).
8. That in reply to the averments contained in **para-23**, CPCB submits that various points raised through the representations were adequately considered as can be seen from the points a to q in the report submitted by CPCB dated 06.07.2020. In fact, CPCB's report starts with the view-points of brick kilns' associations. CPCB does not agree to the observations of the applicant and clarifications on various issues raised by the applicant are submitted in the subsequent sections of this affidavit.
9. That in reply to the averments contained in **para-24**, CPCB submits that report prepared by CPCB is in compliance of the orders of Hon'ble NGT, wherein CPCB was directed to submit report based on the available data. Further, the report of the CPCB is based on the ambient air quality data and not the localized fugitive emission data. It is pertinent to mention that while impact of individual brick kiln may not be felt at 5 Km, but the continuous emission from large number of brick kilns do impact air quality in larger area and this may be seen from the Source Apportionment report of TERI dated August 18 titled "Source Apportionment of PM2.5 & PM10 of Delhi NCR for Identification of Major Sources", which indicated that brick kiln industry contributed about 5 & 7% w.r.t. PM10 emissions in Winter and summer respectively, in ambient air of Delhi and NCR.
10. That in reply to the averments contained in **para-25 to 27**, CPCB submit that out of 24 NCR districts, the assessment made by CPCB in 19 districts is based on CAAQMS data. The AOD based data has been used only in 04 districts and for the months, when CAAQMS data was not available. The assessment made and outcome submitted by CPCB for more than 90% of the total brick kilns firing period, is based on CAAQMS data. It is pertinent to mention that while impact of individual brick kiln

may not be felt at 5 Km, but the continuous emission from large number of brick kilns do impact air quality in larger area and this may be seen from the Source Apportionment report of TERI dated August 18 titled "Source Apportionment of PM2.5 & PM10 of Delhi NCR for Identification of Major Sources", which indicated that brick kiln industry contributed about 5 & 7% w.r.t. PM10 emissions in Winter and summer respectively, in ambient air of Delhi and NCR.

CPCB was directed by Hon'ble NGT as under:

"it is necessary to look at the relevant data at different locations '24 hourly' and 'monthly average' during the relevant months. Since such data is maintained by the CPCB/PCBs, the CPCB may collect such data for corresponding months of March, April, May and June in the year 2019 and furnish the same before the next date. The break-up of location of the brick kilns District-wise may also be furnished to consider as to which of the brick kilns can be allowed after verification that such brick kilns are actually working on 'Zig-Zag' technology, pending further assessment of the carrying capacity by the CPCB, as already directed earlier vide order dated 06.02.2020".

The CPCB was also directed by Hon'ble NGT vide order dated 17/3/2020, as under:

In view of the fact that there is no carrying capacity of the air quality in NCR region to permit any further addition to PM load by permitting unconditional operation of brick kilns using fuel which adds to PM load and since it may be necessary to consider the issue of utilizing fly ash, we require an expert opinion on following issues:

- a) how brick kilns can be allowed in NCR without damage to the air quality;
- b) conditions subject to which it may be done;
- c) number of brick kilns to be allowed and criteria for fixing such numbers.

Therefore, the report prepared by CPCB is in compliance of the orders of Hon'ble NGT, wherein CPCB was directed to submit report based on the available data.

- 11.** That in reply to the averments contained in **para 28**, CPCB submits that in report submitted by CPCB dated 22.01.2020, in O.A. no. 1088 of 2018, recommends that "Requisite number of Ambient Air Quality Monitoring Stations should be installed by

State Pollution Control Boards in order to have background ambient air quality data and also to estimate the carrying capacity while deciding the timings for brick kiln start up and granting permission for expansion/new brick kilns". However, in the subsequent report dated 04/03/2020, in the matter of OA No. 1088/2018 and OA. No. 1016/2016, CPCB examined air quality data of 2019 in NCR. Analysis of the data indicated that PM_{2.5} concentrations in summer months (March-June) is lower (Average 80 µg /m³) in comparison to winter months (Average 173 µg /m³). Similarly, PM₁₀ concentration in summer months (March-June) is lower (Average 219 µg /m³) in comparison to winter months (Average 283 µg /m³). It was also submitted by CPCB that atleast 04 months' time period may be granted to CPCB, for Monitoring of 65 brick kilns in NCR and Non-NCR regions and submission of report covering i) Impact of brick kilns operation on loss/degradation of top soil, ii) study involving Carrying Capacity Assessment of brick kilns with adequate samples in terms of number of brick kilns and days for which monitoring be conducted, iii) Evaluation of the performance of brick kilns against the background concentration and carrying capacity of the area and iv) Impact on Brick Kilns operation on ambient air, in the matters of O.A. No. 1016/2019 and O.A. No. 1088/2018, after commencement of operation of brick kilns in NCR regions." CPCB was directed by Hon'ble NGT on 05/03/2020, to look into the relevant data and accordingly report was filed by CPCB on 16/3/2020. Hon'ble NGT observed in its order dated 23/03/2020 that "In view of the fact that there is no carrying capacity of the air quality in NCR region to permit any further addition to PM load by permitting unconditional operation of brick kilns using fuel which adds to PM load and since it may be necessary to consider the issue of utilizing fly ash, we require an expert opinion on following issues: (a) how brick kilns can be allowed in NCR without damage to the air quality; (b) conditions subject to which it may be done; (c) number of brick kilns to be allowed and criteria for fixing such numbers. Let CPCB look into the above issues and furnish a further report".

Therefore, the report prepared by CPCB is in compliance of the orders of Hon'ble NGT, wherein CPCB was directed to submit report based on the available and relevant data. Further, the report of the CPCB is based on the ambient air quality data and not the localized fugitive emission data.

12. That in reply to the averments contained in **para-29**, CPCB submits that the report prepared by CPCB is in compliance of the orders of Hon'ble NGT, wherein CPCB was directed to submit report based on the available and relevant data. Further, the report of the CPCB is based on the ambient air quality data and not the localized fugitive emission data.

It is pertinent to mention that while impact of individual brick kiln may not be felt at 5 Km, but the continuous emission from large number of brick kilns do impact air quality in larger area and this may be seen from the Source Apportionment report of TERI dated August 18 titled "Source Apportionment of PM_{2.5} & PM₁₀ of Delhi NCR for Identification of Major Sources", which indicated that brick kiln industry contributed about 5 & 7% w.r.t. PM₁₀ emissions in Winter and summer respectively, in ambient air of Delhi and NCR.

- 13.** That in reply to the averments contained in **para-30 to 34**, CPCB submits that CPCB has not used AOD data for regulatory purpose.

CPCB was directed by Hon'ble NGT as under:

"it is necessary to look at the relevant data at different locations '24 hourly' and 'monthly average' during the relevant months. Since such data is maintained by the CPCB/PCBs, the CPCB may collect such data for corresponding months of March, April, May and June in the year 2019 and furnish the same before the next date. The break-up of location of the brick kilns District-wise may also be furnished to consider as to which of the brick kilns can be allowed after verification that such brick kilns are actually working on 'Zig-Zag' technology, pending further assessment of the carrying capacity by the CPCB, as already directed earlier vide order dated 06.02.2020".

The CPCB was also directed by Hon'ble NGT vide order dated 17/3/2020, as under:

In view of the fact that there is no carrying capacity of the air quality in NCR region to permit any further addition to PM load by permitting unconditional operation of brick kilns using fuel which adds to PM load and since it may be necessary to consider the issue of utilizing fly ash, we require an expert opinion on following issues:

- a. how brick kilns can be allowed in NCR without damage to the air quality;
- b. conditions subject to which it may be done;
- c. number of brick kilns to be allowed and criteria for fixing such numbers.

CPCB submits that report prepared by CPCB is in compliance of the orders of Hon'ble NGT, wherein CPCB was directed to submit report based on the available data.

Further, the report of the CPCB is based on the ambient air quality data and not the localized fugitive emission data.

This is also to submit that out of 24 NCR districts, the assessment made by CPCB in 19 districts is based on CAAQMS data. The AOD based data has been used only in 04 districts and for the months, when CAAQMS data was not available as per details given below:

- i. Hapur: AOD based data was used for the month of June, 2019.
- ii. Meerut: AOD based data was used for months of March-June, 2019
- iii. Shamli: AOD based data was used for months of March-June, 2019 and Oct-Dec, 2019.
- iv. Rohtak: AOD based data was used for months of April-June, 2019 and Oct-Dec, 2019.
- v. Charkhi Dadri: No CAAQMS and AOD data was available at the time of preparation of report. Methodology for making assessment in such cases is suggested in the CPCB Report.

Therefore, the assessment made and outcome submitted by CPCB for more than 90% of the total brick kilns firing period, is based on CAAQMS data.

Further, PM_{2.5} data converted from AOD data was obtained from IIT, Delhi and CPCB has not applied any factor for conversion from AOD to PM_{2.5}. It may be mentioned that IIT has carried out a detailed study in collaboration with CPCB, to develop indigenous correlation algorithm for determining ambient PM_{2.5} concentration based on aerosol optical depth (AOD) measurement. The study included calibration and validation exercise with 120 CPCB sites that have multi-layer observations. It has been observed that the median error was about less than 5% for PM_{2.5} up to 200 µg/m³ when a comparison of CAAQMS data with AOD data was made.

As such, it is scientifically appropriate to use AOD based data for estimating carrying capacity. It may be pertinent to mention that such tools and techniques including mathematical models may be used for assessing environmental impact, source apportionment, carrying capacity etc.

14. That in reply to the averments contained in **para-35 to 39**, CPCB submits that out of 24 NCR districts, the assessment made by CPCB in 19 districts is based on CAAQMS data. The AOD based data has been used only in 04 districts and for the months, when CAAQMS data was not available as per details given below:

- i. Hapur: AOD based data was used for the month of June, 2019.
- ii. Meerut: AOD based data was used for months of March-June, 2019

- iii. Shamli: AOD based data was used for months of March-June, 2019 and Oct-Dec, 2019.
- iv. Rohtak: AOD based data was used for months of April-June, 2019 and Oct-Dec, 2019.
- v. Charkhi Dadri: No CAAQMS and AOD data was available at the time of preparation of report. Methodology for making assessment in such cases is suggested in the CPCB Report.

Therefore, the assessment made and outcome submitted by CPCB for more than 90% of the total brick kilns firing period, is based on CAAQMS.

It is agreed that $PM_{2.5}$ value cannot be more than PM_{10} value, provided both the measurements are done within the same period, at same location and by same methodology. Wherever actual measurement data was available, the same was used for assessment made by CPCB and AOD data was used only where actual measurement data was not available. In this case, actual measurement data was available.

The CPCB letter dated 26.06.2020 addressed to PS to MOEF&CC is regarding pole mounted low cost sensor based system. Further, it may be mentioned that IIT has carried out a detailed study in collaboration with CPCB, to develop indigenous correlation algorithm for determining ambient $PM_{2.5}$ concentration based on aerosol optical depth (AOD) measurement. The study included calibration and validation exercise with 120 CPCB sites that have multi-layer observations. It has been observed that the median error was about less than 5% for $PM_{2.5}$ up to $200 \mu g/m^3$ when a comparison of CAAQMS data with AOD data was made. As such, it is scientifically appropriate to use AOD based data for estimating carrying capacity. It may be pertinent to mention that such tools and techniques including mathematical models may be used for assessing environmental impact, source apportionment, etc.

- 15.** That in reply to the averments contained in **para-40 to 43**, CPCB submits that on the basis of the availability of data and the objective of estimating the number of brick kilns which can be operated without affecting the ambient air quality, the carrying capacity was assessed using ambient air concentration vis a vis PM_{10} . It was observed that no carrying capacity was available, where ambient air concentration was exceeding the prescribed standard. Wherever, carrying capacity was available, number of brick kilns, which can be operated, were calculated.

It is also submitted that irrespective of the methodology or the modelling followed, the ambient air carrying capacity of any area will depend on the actual concentration

of PM₁₀ in ambient air environment. Let us take example of Gurugram for the month of April, 2019:

Average PM₁₀ concentration in Gurugram in April, 2019: 257 ug/m³

Standard of PM₁₀ in the ambient air: 100 ug/m³

Now, let us calculate the ambient air carrying capacity of Gurugram w.r.t. PM₁₀

Total Load of PM₁₀ (In terms of concentration) : 257 ug/m³

Assimilative Air Capacity (In terms of concentration): 100 ug/m³

So, the supportive ambient air carrying capacity: Assimilative Capacity-Total load

i.e. Supportive carrying Capacity: 100-257 = - 157 ug/m³

- 16.** That in reply to the averments contained in **para-44**, CPCB submits that on the basis of the availability of data and the objective of estimating the number of brick kilns which can be operated without affecting the ambient air quality, the carrying capacity was assessed using ambient air concentration vis a vis PM₁₀. It was observed that no carrying capacity was available, where ambient air concentration was exceeding the prescribed standard. Wherever, carrying capacity was available, number of brick kilns, which can be operated, were calculated. No modeling was required in the methodology adopted by CPCB, for assessing the carrying capacity, in order to determine the number of brick kilns which can be operated.

It is also submitted that irrespective of the methodology or the modelling followed, the ambient air carrying capacity of any area will depend on the actual concentration of PM₁₀ in ambient air environment. Let us take example of Gurugram for the month of April, 2019:

Average PM₁₀ concentration in Gurugram in April, 2019: 257 ug/m³

Standard of PM₁₀ in the ambient air: 100 ug/m³

Now, let us calculate the ambient air carrying capacity of Gurugram w.r.t. PM₁₀

Total Load of PM₁₀ (In terms of concentration) : 257 ug/m³

Assimilative Air Capacity (In terms of concentration): 100 ug/m³

So, the supportive ambient air carrying capacity: Assimilative Capacity-Total load

i.e. Supportive carrying Capacity: 100-257 = - 157 ug/m³

- 17.** That in reply to the averments contained in **para-45**, CPCB submits that the observation made by CPCB are based on the actual monitoring done during the study conducted in this matter alongwith the representative of State Pollution Control

Boards, who are responsible for grant of consent to operate, wherein type of fuel used by individual brick kilns is also specified. CPCB didn't come across any brick kiln with consent to operate for using HSD, during study conducted in the matter of OA No. 1088/2018. No HSD burner was found to be used during the study. Respective State Pollution Control Boards may be asked to verify if the brick kilns have obtained consent to operate for using HSD as fuel and accordingly APCD have been installed to arrest pollution during initial firing.

- 18.** That in reply to the averments contained in **para-46**, CPCB submits that PM₁₀ emission load of 1000 kg/d/brick kiln is calculated based on the actual monitoring done by CPCB taking into the account the actual emission concentration, cross sectional area of the stack at the point where port hole is located, flue gas velocity at the point of monitoring and other relevant values collected during monitoring. The data considered in the report submitted to Hon'ble NGT by CPCB , for calculation of emission load, based on the actual monitoring performed by CPCB in the matter of OA No. 1088/2018 ; Dinesh Chahal & Ors. Vs Union of India & Ors., is as follows:

Average stack height: 34 mtr; Average stack diameter : 4 mtr (At the point, where monitoring was done i.e port hole); Flue gas velocity : 4 mtr/Sec (At the point, where monitoring was done i.e. port hole); Ts, K: 325; Ps, mm of Hg: 745; Average O₂ %: 18.86; Average CO₂: 2.10

- 19.** That in reply to the averments contained in **para-47**, CPCB submits that the number of brick kilns which can operated has been estimated based on the available supportive capacity of individual districts, which varied based on number of factors including other emission sources and activities and not on the basis of area.
- 20.** That in reply to the averments contained in **para-48 to 52**, CPCB submits that PM₁₀ emission load of 1000 kg/d/brick kiln is calculated based on the actual monitoring done by CPCB taking into the account the actual emission concentration, cross sectional area of the stack at the point where port hole is located, flue gas velocity at the point of monitoring and other relevant values collected during monitoring. CPCB has revisited its calculation and confirm that the value considered by CPCB is technically correct. The data considered in the report submitted to Hon'ble NGT by CPCB, for calculation of emission load, based on the actual monitoring performed by CPCB in the matter of OA No. 1088/2018 ; Dinesh Chahal & Ors. Vs Union of India & Ors., is as follows:

Average stack height: 34 mtr; Average stack diameter: 4 mtr (At the point, where monitoring was done i.e port hole); Flue gas velocity : 4 mtr/Sec (At the point, where monitoring was done i.e. port hole); Ts, K: 325; Ps, mm of Hg: 745; Average O2%: 18.86; Average CO₂ %: 2.10

- 21.** That in reply to the averments contained in **para-53 to 55**, CPCB submits that all the calculations made by CPCB in the report submitted to Hon'ble NGT in this matter are based on the monitoring of the actual current working of the brick kilns during study conducted by CPCB in compliance of the orders of Hon'ble NGT.

CPCB has revisited its calculation and confirm that the value considered by CPCB is technically correct. PM₁₀ emission load of 1000 kg/d/brick kiln is calculated based on the actual monitoring done by CPCB taking into the account the actual emission concentration, cross sectional area of the stack at the point where port hole is located, flue gas velocity at the point of monitoring and other relevant values collected during monitoring.

The data considered in the report submitted to Hon'ble NGT by CPCB , for calculation of emission load, based on the actual monitoring performed by CPCB in the matter of OA No. 1088/2018 ; Dinesh Chahal & Ors. Vs Union of India & Ors., is as follows:

Average stack height: 34 mtr; Average stack diameter : 4 mtr (At the point, where monitoring was done i.e port hole); Flue gas velocity : 4 mtr/Sec (At the point, where monitoring was done i.e. port hole); Ts, K: 325; Ps, mm of Hg: 745; Average O2%: 18.86; Average CO₂: 2.10

- 22.** That in reply to the averments contained in **para-56 to 59**, CPCB submits that all the calculations made by CPCB in the report submitted to Hon'ble NGT in this matter are based on the monitoring of the actual current working of the brick kilns during study conducted by CPCB in compliance of the orders of Hon'ble NGT.

CPCB has revisited its calculation and confirm that the value considered by CPCB is technically correct. PM₁₀ emission load of 1000 kg/d/brick kiln is calculated based on the actual monitoring done by CPCB taking into the account the actual emission concentration, cross sectional area of the stack at the point where port hole is located, flue gas velocity at the point of monitoring and other relevant values collected during monitoring. The data considered in the report submitted to Hon'ble NGT by CPCB , for calculation of emission load, based on the actual monitoring performed by CPCB in the matter of OA No. 1088/2018 ; Dinesh Chahal & Ors. Vs Union of India & Ors., is as follows:

Average stack height: 34 mtr; Average stack diameter : 4 mtr (At the point, where monitoring was done i.e port hole); Flue gas velocity : 4 mtr/Sec (At the point, where

monitoring was done i.e. port hole); Ts, K: 325; Ps, mm of Hg: 745; Average O2%: 18.86; Average CO2: 2.10

- 23.** That in reply to the averments contained in **para-60**, CPCB submits that all the calculations made by CPCB in the report submitted to Hon'ble NGT in this matter are based on the monitoring of the actual current working of the brick kilns during study conducted by CPCB in compliance of the orders of Hon'ble NGT.

CPCB has revisited its calculation and confirm that the value considered by CPCB is technically correct. PM₁₀ emission load of 1000 kg/d/brick kiln is calculated based on the actual monitoring done by CPCB taking into the account the actual emission concentration, cross sectional area of the stack at the point where port hole is located, flue gas velocity at the point of monitoring and other relevant values collected during monitoring.

The data considered in the report submitted to Hon'ble NGT by CPCB , for calculation of emission load, based on the actual monitoring performed by CPCB in the matter of OA No. 1088/2018 ; Dinesh Chahal & Ors. Vs Union of India & Ors., is as follows:

Average stack height: 34 mtr; Average stack diameter : 4 mtr (At the point, where monitoring was done i.e port hole); Flue gas velocity : 4 mtr/Sec (At the point, where monitoring was done i.e. port hole); Ts, K: 325; Ps, mm of Hg: 745; Average O2%: 18.86; Average CO2: 2.10

With regard to the avertment made by the applicant that saturation of the carrying capacity of Delhi-NCR cannot be the basis for denying permission to brick kilns to operate. This is particularly because brick kilns emissions are not amongst the main contributors to air pollution in Delhi-NCR, the observation of the Hon'ble NGT in the order dated 17/03/2020 may be referred as follows:

"When there is no carrying capacity in the area for further air pollution, we find it difficult to permit operation of the closed brick kilns to uphold the 'Sustainable Development' principle. When even without operation of the brick kilns the air quality is not within the norms, the impact of operation of the brick kilns cannot be ignored. Thus, we find it difficult to accept the submission that the individual brick kilns maintaining the prescribed standards for discharge of emissions are entitled to operate or that they be allowed to operate on the ground that pollution caused by the brick kilns is less than other pollution from other sources irrespective of carrying capacity of the area. The fact remains that brick kilns add to the air pollution and thereby affect right of citizens to breathe fresh air".

24. That in reply to the averments contained in **para-61 to 63**, CPCB submits that all the calculations made by CPCB in the report submitted to Hon'ble NGT in this matter are based on the monitoring of the actual current working of the brick kilns during study conducted by CPCB in compliance of the orders of Hon'ble NGT.

CPCB has revisited its calculation and confirm that the value considered by CPCB is technically correct. PM₁₀ emission load of 1000 kg/d/brick kiln is calculated based on the actual monitoring done by CPCB taking into the account the actual emission concentration, cross sectional area of the stack at the point where port hole is located, flue gas velocity at the point of monitoring and other relevant values collected during monitoring.

The data considered in the report submitted to Hob'ble NGT by CPCB , for calculation of emission load, based on the actual monitoring performed by CPCB in the matter of OA No. 1088/2018 ; Dinesh Chahal & Ors. Vs Union of India & Ors., is as follows:

Average stack height: 34 mtr; Average stack diameter : 4 mtr (At the point, where monitoring was done i.e port hole); Flue gas velocity : 4 mtr/Sec (At the point, where monitoring was done i.e. port hole); Ts, K: 325; Ps, mm of Hg: 745; Average O2%: 18.86; Average CO2: 2.10

25. That in reply to the averments contained in **para-64 to 65**, CPCB submits that all the calculations made by CPCB in the report submitted to Hon'ble NGT in this matter are based on the monitoring of the actual current working of the brick kilns during study conducted by CPCB in compliance of the orders of Hon'ble NGT. CPCB has revisited its calculation and confirm that the value considered by CPCB is technically correct. PM₁₀ emission load of 1000 kg/d/brick kiln is calculated based on the actual monitoring done by CPCB taking into the account the actual emission concentration, cross sectional area of the stack at the point where port hole is located, flue gas velocity at the point of monitoring and other relevant values collected during monitoring.

The data considered in the report submitted to Hob'ble NGT by CPCB , for calculation of emission load, based on the actual monitoring performed by CPCB in the matter of OA No. 1088/2018 ; Dinesh Chahal & Ors. Vs Union of India & Ors., is as follows:

Average stack height: 34 mtr; Average stack diameter : 4 mtr (At the point, where monitoring was done i.e port hole); Flue gas velocity : 4 mtr/Sec (At the point, where monitoring was done i.e. port hole); Ts, K: 325; Ps, mm of Hg: 745; Average O2%: 18.86; Average CO2: 2.10

26. That in reply to the averments contained in **para-66**, it is submitted that CPCB has revisited its calculation and confirm that the value considered by CPCB is technically correct. PM₁₀ emission load of 1000 kg/d/brick kiln is calculated based on the actual monitoring done by CPCB taking into the account the actual emission concentration, cross sectional area of the stack at the point where port hole is located, flue gas velocity at the point of monitoring and other relevant values collected during monitoring.

The data considered in the report submitted to Hon'ble NGT by CPCB , for calculation of emission load, based on the actual monitoring performed by CPCB in the matter of OA No. 1088/2018 ; Dinesh Chahal & Ors. Vs Union of India & Ors., is as follows:

Average stack height: 34 mtr; Average stack diameter : 4 mtr (At the point, where monitoring was done i.e port hole); Flue gas velocity : 4 mtr/Sec (At the point, where monitoring was done i.e. port hole); Ts, K: 325; Ps, mm of Hg: 745; Average O2%: 18.86; Average CO2: 2.10

27. That in reply to the averments contained in **para-67**, CPCB submit that it has been recommended by CPCB in the report that "However, all Zig-Zag brick kilns may be considered to perform upstream activities such as green brick manufacturing, stacking of green bricks, etc. during non-firing period".

The report regarding fugitive emission during green brick manufacturing has been submitted earlier by CPCB in compliance of Hon'ble NGT order dated 15.11.2020 in the present OA. No. 1016/2019. This reports specifies sources of fugitive emissions including green brick manufacturing, quantum of fugitive emissions at various stages of green bricks manufacturing and precautions required to arrest fugitive dust emissions.

The quantum of fugitive emission at various stages of green brick manufacturing from various type of kilns, as submitted by CPCB in the above mentioned report is reproduced below for reference:

Average SPM values (mg/m³) of fugitive emissions in different type of Kilns

Type of Kilns	Moulding Area	Loading Area	Charging Area	Unloading Area
Fixed Chimney Bull's Trench Kiln (FCBTK) (Coal)	16.08	18.81	15.33	17.69

Fixed Chimney Bull's Trench Kiln (Biomass)	14.55	15.37	17.59	17.16
High Draft Kiln Zig-Zag	12.50	16.73	14.31	17.32
Natural draft Zig-Zag	12.50	13.13	17.50	21.04
Down Draft Kiln (DDK)	-	-	20.83	38.33
Hoffman Kiln	-	26.35	20.42	13.75
Vertical Shaft Brick Kiln (VSBK)	12.81	15.16	-	23.50
Clamp Kiln	9.53	-	18.14	-

Based on the above data, it was concluded in the above report of the CPCB that fugitive emissions from all types of brick kilns, irrespective of the firing technology used, is more or less similar .

- 28.** That in reply to the averments contained in **para-68**, are matter of record and needs no comments from this answering respondent i.e. Central Pollution Control Board (CPCB).
- 29.** That, in reply to the averments contained in **para-69**, CPCB submits that it is pertinent to mention that while impact of individual brick kiln may not be felt at 5 Km, but the continuous emission from large number of brick kilns do impact air quality in larger area and this may be seen from the Source Apportionment report of TERI dated August 18 titled "Source Apportionment of PM2.5 & PM10 of Delhi NCR for Identification of Major Sources", which indicated that brick kiln industry contributed about 5 & 7% w.r.t. PM₁₀ emissions in Winter and summer respectively, in ambient air of Delhi and NCR.
- 30.** That in reply to the averments contained in **para-70**, are matter of record and needs no comments from this answering respondent i.e. Central Pollution Control Board (CPCB).
- 31.** That in reply to the averments contained in **para-71** CPCB has revisited all the calculations and estimates submitted in the report. CPCB confirm that the report submitted by CPCB is technically correct and in line with the directions of Hon'ble NGT in this matter.

32. That in reply to the averments contained in **para-72 (a-i)** CPCB submits that the number of brick kilns which can be operated based on the available carrying capacity were worked out in compliance of the orders of Hon'ble NGT dated 17/3/2020.

Further CPCB report dated 06/07/2020, provides details of the contribution of brick kilns as follows:

"The examination of the month-wise and district-wise carrying capacity, indicates that Zig-zag type brick kilns in NCR districts should preferably be operated in summer months only, unless or until there is improvement in environmental condition through reduction in PM10 emissions by various sources which contribute towards PM10 emissions in Delhi NCR, leading to availability in the supportive carrying capacity. The reduction in PM10 emissions by all the contributing sources of PM10 emissions in Delhi-NCR becomes more significant in view of the fact that , the findings of a joint study on "Source Apportionment of PM2.5 and PM10 of Delhi NCR for identification of major sources" prepared by Automotive Research Association of India (ARAI) and The Energy and Resources Institute (TERI) for Department of Heavy Industry, Ministry of Heavy Industries and Public Enterprises, New Delhi, in the year 2016, indicates that that brick kiln industry contributed about 5 & 7% w.r.t. PM10 emissions in Winter and summer respectively, in ambient air of Delhi and NCR . Further reduction of 4% in total PM10 was expected after conversion to Zig-Zag technology, which has now been implemented by brick Kilns in Delhi-NCR."

With regard to applicant's observation that CPCB instead of conducting fresh study, have taken data from its December, 2013 study report, "Revision of comprehensive Industry Document for Brick Kilns." Final Report conducted by Punjab State Council for Science and Technology, Chandigarh and concluded that average fugitive SPM values are almost same in FCBTK and Zig-zag brick kilns at all four monitored stages of brick manufacturing process, CPCB submits that this conclusion was drawn by CPCB in its report dated 13/12/2019, in compliance of directions of Hon'ble NGT in the matter of OA. No. 1016/2019 vide order dated 15/11/2019. In its report dated 13/12/2019, CPCB submitted that "brick kilns operate seasonally and kilns in NCR region are presently closed and yet to come into operation. However, in the past, a study of fugitive emission monitoring was carried out by CPCB through PSCST, to

assess the cumulative impacts on air pollution from different type of brick kilns”

- 33.** That in reply to the averment made in the **Para-72 (g)** CPCB submits that in compliance of Hon'ble NGT order dated 15/11/2019, CPCB was required to submit the findings w.r.t. only fugitive emissions. During manufacturing process in brick kilns, the sources of fugitive emissions are moulding area, feeding holes of fuels, crushing process of coal, loading/unloading of brick, Keri i.e. dust/ash obtained from kiln bottom loaded at the top of brick setting for air sealing, vehicle for transportation, and high velocity winds. The report of CPCB concluded that “it may be noted that though the stack emissions are less in case of kilns operating on Zig-Zag technology, when compared to the kilns operating on FCBTK technology on the same fuel, the quantum of fugitive dust emissions from all type of kilns are more or less same. In view of this and the fact that dust emissions may also be generated from the movement of vehicles within the premises of the brick kilns, if the moving area is not paved. “Therefore, the statement of the applicant that the CPCB’s report dated 13/12/2019 filed before Hon’ble Tribunal gave incorrect impression, is neither correct nor justified at all.
- 34.** That in reply to the averments made in the **Para-72 (h)**, CPCB submits that setting-aside of the closure order for brick kilns is under jurisdiction of Hon'ble NGT and hence no comments are required from CPCB. CPCB has filed its report in compliance of the orders of Hon'ble NGT w.r.t. how brick kilns can be allowed in NCR without damage to the air quality; conditions subject to which it may be done; number of brick kilns to be allowed and criteria for fixing such numbers.
- 35.** That in reply to the averment made in the **Para-72 (i)**, it is submitted that a Notification on use of fly ash is issued by MoEF&CC on 14/9/1999 (amended in 2003, 2009 and 2016), and SPCBs are the designated authorities for ensuring compliance of above provisions of Notification dated 14/9/1999 regarding utilization of ash of power plants. The comments regarding availability of fly ash for brick manufacturing may kindly be obtained from SPCBs.
- 36.** That in reply to the averments contained in **para-73**, CPCB submits that report prepared by CPCB is in compliance of the orders of Hon'ble NGT, wherein CPCB was directed to submit report based on the available data. Further, the report of the CPCB is based on the ambient air quality data and not the localized fugitive emission data.

It is pertinent to mention that while impact of individual brick kiln may not be felt at 5 Km, but the continuous emission from large number of brick kilns do impact air

quality in larger area and this may be seen from the Source Apportionment report of TERI dated August 18 titled "Source Apportionment of PM_{2.5} & PM₁₀ of Delhi NCR for Identification of Major Sources", which indicated that brick kiln industry contributed about 5 & 7% w.r.t. PM₁₀ emissions in Winter and summer respectively, in ambient air of Delhi and NCR.

CPCB also submits that on the basis of the availability of data and the objective of estimating the number of brick kilns which can be operated without affecting the ambient air quality, the carrying capacity was assessed using ambient air concentration vis a vis PM₁₀. It was observed that no carrying capacity was available, where ambient air concentration was exceeding the prescribed standard. Wherever, carrying capacity was available, number of brick kilns, which can be operated, were calculated. No modeling was required in the methodology adopted by CPCB, for assessing the carrying capacity, in order to determine the number of brick kilns which can be operated.

It is also submitted that irrespective of the methodology or the modelling followed, the ambient air carrying capacity of any area will depend on the actual concentration of PM₁₀ in ambient air environment. Let us take example of Gurugram for the month of April, 2019:

- 37.** That in reply to the averments contained in **para-74 to 76**, CPCB submits that operation of brick kilns in NCR is under consideration with Hon'ble NGT and hence no comments required from the CPCB. CPCB would also like to humbly refer the observation of the Hon'ble NGT in the order dated 17/03/2020 as follows:

"When there is no carrying capacity in the area for further air pollution, we find it difficult to permit operation of the closed brick kilns to uphold the 'Sustainable Development' principle. When even without operation of the brick kilns the air quality is not within the norms, the impact of operation of the brick kilns cannot be ignored. Thus, we find it difficult to accept the submission that the individual brick kilns maintaining the prescribed standards for discharge of emissions are entitled to operate or that they be allowed to operate on the ground that pollution caused by the brick kilns is less than other pollution from other sources irrespective of carrying capacity of the area. The fact remains that brick kilns add to the air pollution and thereby affect right of citizens to breathe fresh air".

PRAYER

In view of the above facts and circumstance as well as the reports filed by the CPCB, it is humbly prayed that the application of the applicant may kindly be dismissed with cost or pass any other further order as this Hon'ble Tribunal may deems fit and proper in the interest of justice. However, this answering Respondent shall abide by any order or directions, if any, passed by this Hon'ble Tribunal.

(S.K. Gupta)

Scientist 'E'

Central Pollution Control Board

Place: Delhi

Dated:13.10.2020



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

I.A. No. 340 Of 2020

In

Original Application No.1016 Of 2019

In the matter of:-

Utkarsh Panwar

.....Applicant

Versus

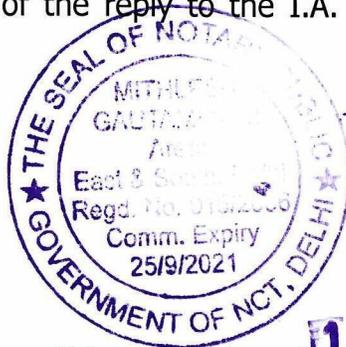
Central Pollution Control Board & Ors

.....Respondent(s)

AFFIDAVIT

I, S.K. Gupta aged about 57 years do hereby solemnly affirm and state as under:

1. That I am Scientist 'E' in the central Pollution Control Board and well conversant with the facts and circumstances of this case and competent to swear this affidavit.
2. That the contents of the reply to the I.A. are true and correct to the best of my knowledge.



[Handwritten signature]
DEPONENT

Identify the deponent who was signed in my presence

VERIFICATION:

Verified at New Delhi on this ___ day of Oct. 2020, that the contents of the above affidavit are true and correct to the best of my knowledge

[Handwritten signature]
DEPONENT

13 OCT 2020

CERTIFIED THAT THE DEPONENT
Shri/Smt./Km. *S.K. Gupta*
Scientist 'E' in C.P.C.B. Delhi
Identified by *self*
has solemnly affirmed and stated at Delhi
on **13 OCT 2020**
that the contents of the affidavit which
have been filed in the case are true and correct to his/her knowledge.
M. Gupta
Notary Public-Karkardooma Court, Delhi

13 OCT 2020