Report of the Expert Committee

Submitted in reference to

Hon'ble National Green Tribunal
Order dated 03.06.2021

in the matter of

Original Application No. 31 of 2021 (CZ)

Vijay Singh

Vs

State of Rajasthan & Ors

Members of the Committee

1. Dr S K Goyal, Chief Scientist & Head, Delhi Zonal Centre, CSIR-NEERI, Delhi
2. Dr Neeraj Jain, Principal Scientist, CSIR-CBRI, Roorkee
3. Prof Sumit Khandelwal, Dept of Civil Engg, MNIT, Jaipur, Rajasthan
4. Regional Officer, RSPCB, Alwar, Rajasthan
5. Sh Sunil Kumar Meena. Scientist 'D', CPCB, RD, Bhopal

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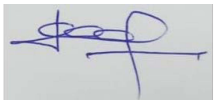
~INDEX~



(P Jagan)
Regional Director
CPCB, RD, Bhopal

Report of the Expert Committee in compliance to the Hon'ble NGT O.A. 31 of 2021 (CZ) order dated 3.6.2021

The Hon'ble NGT vide order dated 3rd June 2021 in the O.A. 31 of 2021 (CZ) in the matter of Vijay Singh v/s State of Rajasthan & Ors directed under Para 13 & 14 as:

13. *Accordingly, we direct CPCB to constitute a Committee of five experts to suggest ways and means, if any, by which sustenance of brick kilns activities may be viable. It will be open to CPCB to nominate in-house or other Experts. The CPCB may also explore viability of PNG as replacement of coal and other best practices in terms of fuel used, at other places. It will be open to the brick kilns owners/associations to give any other suggestions or alternatives for consideration, by CPCB in spirit of collaboration with a view to find a solution within a reasonable time. The CPCB may constitute an expert committee with the consultation of Member Secretary, State Pollution Control Board within three weeks which may give its report within six weeks thereafter. Further report may be furnished in the matter for the year 2019 & 2020 on the following points :*
    i. Estimation of Existing Pollution Load w.r.t PM2.5
    ii. Estimation of Assimilative Carrying Capacity w.r.t PM10
    iii. Estimation of Supportive Carrying Capacity w.r.t PM10"

14. *The committee may also submit the suggestions so that the freedom of trade, business and right to life, with regard to fresh air and unpolluted water should be balanced. The report may be furnished in the matter before the next date i.e. 06th September, 2021 by email at ngtczbbho-mp@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF.*

In compliance of the Hon'ble NGT order, a 05 member expert committee was constituted on 24th June 2021 in consultation with Member Secretary, Rajasthan State Pollution Control Board (RSPCB). The copy of the Office order dated 24.06.2021 is enclosed as **Annexure-I.**

Expert committee of the following members was constituted for complying the Hon'ble NGT order

1. Dr S K Goyal, Chief Scientist & Head, Delhi Zonal Centre, CSIR-NEERI, Delhi
2. Dr Neeraj Jain, Principal Scientist, CSIR-CBRI, Roorkee
3. Prof Sumit Khandelwal, Dept of Civil Engg, MNIT, Jaipur, Rajasthan
4. Sh O P Gupta, Regional Officer, RSPCB, Alwar, Rajasthan

5. Sh Sunil Kumar Meena. Scientist 'D', CPCB, RD, Bhopal (Member Convener)

1.0 TERMS OF REFERENCE OF THE EXPERT COMMITTEE

i. The committee shall look into the issues raised and finalise the report within the stipulated time frame.
ii. The expert committee shall meet as and when required. Member Convener will coordinate with the members of the Joint Committee for conducting meetings and field visits.
iii. The committee shall invite any other member as a "Special Invitee" as and when required with prior approval of MS, RSPCB.

Office of RSPCB vide its letter dated 30.07.2021 informed about the transfer of Sh O P Gupta, Regional Officer, Alwar. In place of Sh O P Gupta, new regional officer Sh Sharad Saxena, RO, RSPCB, Alwar was added in the expert committee. Copy of the letter dated 30.7.2021 is enclosed as **Annexure-II.**

The expert committee held its 05 virtual meetings on 30.6.2021, 29.7.2021, 4.8.2021, 10.8.2021 and 19.8.2021. As per the discussion held during meetings; field surveys and monitoring was executed by the office of RSPCB and based on the available monitoring data, estimation of the pollution load, assimilative & supportive carrying capacity was estimated. The details of the meetings held and the task carried out are given below:

Date of the meeting	**Discussion Points & Tasks**
June 30, 2021	The committee was in the opinion to collect few preliminary data related to brick kilns & ambient air monitoring in Rajakhera and Dholpur regions along with collecting data of brick kilns monitoring conducted earlier. 1. Collection of the brick kiln related data for Rajakhera & Dholpur district viz. No. Of brick kilns, their technology (FCBTK/Zig-Zag etc.), Fuel types used and daily consumption, operational schedule, production capacity, status & validity of CTE, CTO, GPS location, stack details. 2. 24 hour AAQM for PM_{10} & $PM_{2.5}$ at six Rajakhera and nearby locations. 3. Collection of AOD data of Rajakhera and Dholpur districts. 4. Discussion with GAIL, India regarding the PNG gas feasibility & availability.
July 29, 2021	Based on the information furnished by CPCB

	& RSPCB; a detailed discussion on the Ambient Air Quality Monitoring, Aerosol Optical Density, Source emission monitoring of Brick kiln data and brick kiln establishment in the Rajakhera, Dholpur was held. Further, it was opined by Dr S K Goyal, Chief Scientist, NEERI, Delhi that based on the available information of the area; a sensitivity analysis may be carried out considering combination of fuel type, meteorological condition etc.
August 4, 2021	Dr S K Goyal, Chief Scientist, NEERI, Delhi explained the outcome of the sensitivity analysis carried out considering the worst conditions viz. uni-directional wind & low wind speed. The impact of the operation of brick kilns on the ambient air quality and the average distance where minimal ground level concentration observed was discussed. As the calculation was based on the average top diameter of the chimney i.e. 0.9 m; it was decided by the committee to consider the diameter and velocity of the flue gases where is was monitored. Dr Goyal was requested to re-calculate the same by considering modified data set of velocity, diameter, temperature etc and consider variable wind directions for the sensitivity analysis. The committee was in the opinion that assessment of the carrying capacity of the area merely based on the 24 hourly ambient Air Quality Standard for PM_{10} i.e. 100µg/m^3 will not provide the clear picture on the environmental carrying capacity where background concentration of the PM_{10} is already high. Rather contribution of PM in the ambient air due to operation of the brick kilns needs to be taken in consideration.
August 10, 2021	The outcome of the sensitivity analysis carried out considering the variable wind directions with revised data set viz. Flue gas velocity & diameter of the chimney at the monitoring portholes was discussed. The outcome suggests that for a particular wind direction, all the brick kilns (103) will not be

	contributing PM to the ambient air towards Rajakhera; only few falling in a particular direction will contributes Contribution of single brick kiln operation showed very less contribution towards Rajakhera. The committee discussed in detail the structure of the chimney and its exit velocity in light of natural draft. It was informed by RSPCB official (as per the discussion with chimney designer) that 12ft diameter is provided at base and this diameter decrease by 4.5 inches every 5 feet and the top diameter is maintained about 35 inches. Secondly, the life of a chimney is considered as 25 years whereas the settling chamber is replaced after about every 10 years. In light of the variable diameter of the chimney along its height and non availability of exit velocity, committee opined to consider the available monitoring porthole data for further analysis. Dr Goyal explained the concept of environmental carrying capacity and its assimilation capacity in detail. He suggested that to make sustainable development, the supportive capacity needs to be based on the interventions that may results in accommodation of the new industrial activities viz. converting FCBTK in Zigzag or changing fuel from coal to gas etc.
August 19, 2021	The committee had discussions on the variation in theoretical air quantity v/s the monitored air quantity. It was observed that for a high draft zig-zag kiln producing 30000 bricks/day, 1,40,920 m^3 and 2,01,314 m^3 of air/day is required for SEC of 0.91 MJ/kg and 1.3 MJ/kg, respectively. Whereas, the corresponding air requirement as calculated from monitored field data of the 08 FCBTK (coal+husk) based operational brick kilns at Aligarh, UP is 18,31,248 m^3/day. This variation may be due to the following conditions: • Theoretical air calculated considering High

	draft zig-zag kilns whereas monitored values are of FCBTK natural draft kilns. • Theoretical air was calculated at 17% excess air; whereas monitored kilns were having average 18.4% O_2 in flue gas. • The flue gas velocity was monitored during the fuel charging period only; whereas, average 30-45mins non-charging period also comes between chargings. This may result in variation in velocity. • The stack diameter is not uniform throughout the length; diameter at bottom/base is about 4m whereas at top it reduce upto 1m. In such non-uniform natural draft stack, monitoring height may also play an important role. The committee opined that as CPCB has recently carried out source emission monitoring of brick kilns of Aligarh with available methodology; the monitoring results may be considered for the assessment of the pollution load, carrying capacity and supportive capacity. However, above points may be considered in further monitoring.

Copies of the Minutes of Meetings are enclosed as **Annexure-III**.

2.0 Status of the Brick kilns

The matter is related to the air pollution due to the brick kilns operational in the Rajakhera village, Dholpur. The Rajakhera village is located at 26.894696° North latitude, 78.170710° East longitude; at about 8kms aerial distance from River Chambal. Agra city in North and Dholpur in South-West direction are situated at aerial distance of about 35 kms from the village Rajakhera.

The field survey of the brick kilns established in Rajakhera was conducted by Rajasthan State Pollution Control Board (RSPCB). None of the brick kiln was found operational during the field survey due to the ongoing rainy season. The status of brick kilns w.r.t. status of operation, Consent to Operate, Fuel use is as tabulated below:

Village	No. Of brick kilns	Type	Fuel	CTO validity
Rajakhera	**103** (Operational-96, Closed-04, Proposed-02 & Under construction -1)	FCBTK (102) Zig-Zag (1)	Coal (7) Husk (77) Husk + coal (16) Not applicable (03)	Valid-27 Expired-17 Pending-02 Without CTO-57

The field survey revealed that out of 103 brick kilns established within 11kms radial distance from Rajakhera block, only one brick kiln is utilizing Zig-Zag technology and rest all are of Fixed Chimney Bull's Trench Kiln (FCBTK) technology. The major fuel used is Husk (Agro-residue). A huge number of brick kilns i.e. **57** out of 103 are running without Consent to Operate.

The detailed survey report is enclosed as **Annexure-IV.**

2.1 Status of Ambient Air Quality

The 24-hour Ambient Air Quality monitoring of the Rajakhera village and nearby area for PM_{10} & $PM_{2.5}$ was conducted for 02 consecutive days during 7-10th July 2021 by the RSPCB officials at following 06 locations falling within 10 kms radial distance from Rajakhera village:

Location no.	Monitoring Location Detail	Latitude	Longitude
1.	House of Shri Pappu Parashar, Village - Jarah, Tehsil - Rajakhera, Dholpur	26.836488	78.106443
2.	House of Shri Ram Awtar, Village - Bichola, Tehsil - Rajakhera, Dholpur	26.888841	78.169695
3.	House of Shri Shrikant Singh Parmar, Village - Beech Ka Pura, Tehsil - Rajakhera, Dholpur	26.895823	78.060479
4.	House of Shri Sitaram, Village - Teerajpur, Tehsil - Rajakhera, Dholpur	26.901212	78.099852
5.	House of Shri Mangal Jain, Village - Mithawali, Tehsil - Rajakhera, Dholpur	26.874526	78.092203
6.	House of Shri Bachan Singh, Village - Gangoliyapura, Tehsil - Rajakhera, Dholpur	26.891838	78.12891

During the monitoring period i.e. 7-10th July 2021, none of the brick kiln was found to be operational. Rain event was recorded on 8.7.2021 at Dholpur but not at the monitoring site i.e. Rajakhera. The monitoring days were observed sunny with high wind velocity. The soil

condition of the monitoring area was loose type. The monitoring results are as tabulated below:

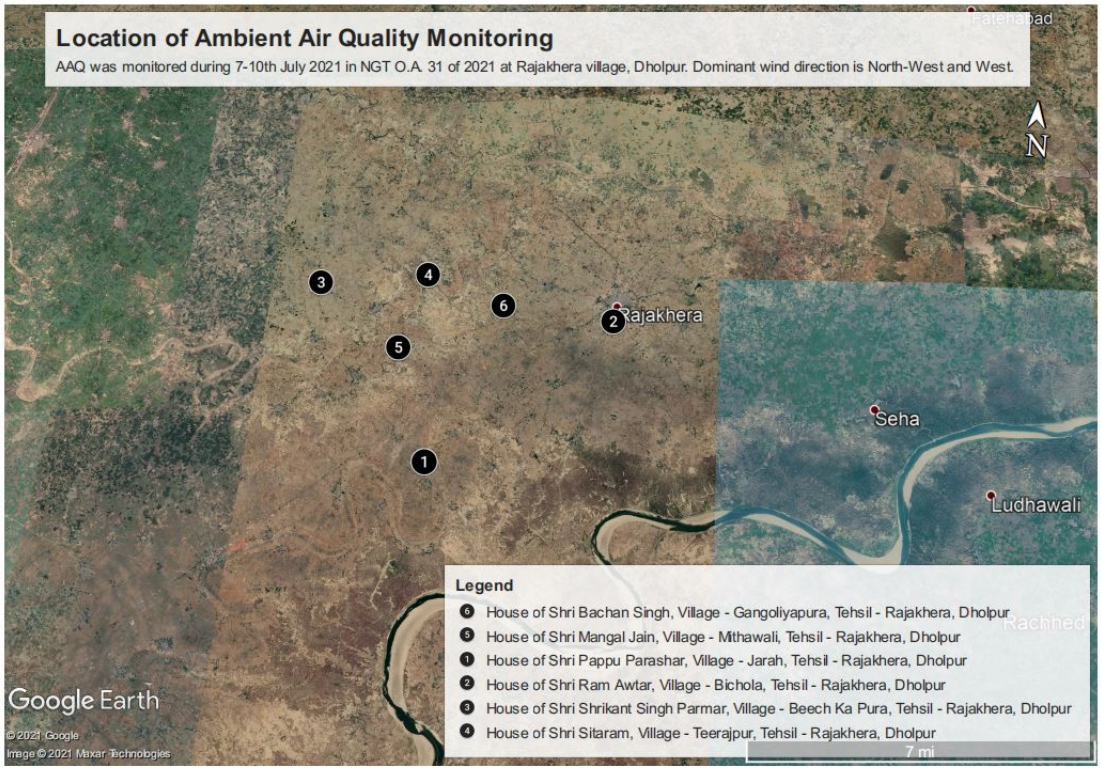
Location no.	Date of monitoring	PM_{10}	$PM_{2.5}$	Remarks
1	7.7.2021	309	124	Land preparation & seeding of Kharif crop was ongoing.
	8.7.2021	117	58	
2	7.7.2021	200	92	No major air polluting activity viz. Garbage burning, land preparation etc. was observed
	8.7.2021	254	118	
3	9.7.2021	109	55	Land leveling work was ongoing on 9.7.2021.
	10.7.2021	72	34	
4	9.7.2021	99	48	No major air polluting activity viz. Garbage burning, land preparation etc. was observed
	10.7.2021	75	33	
5	7.7.2021	317	137	Land preparation & seeding of Kharif crop was ongoing.
	8.7.2021	279	133	
6	9.7.2021	155	76	No major air polluting activity viz. Garbage burning, land preparation etc. was observed
	10.7.2021	77	37	

The location no. 02 was in the Rajakhera village, whereas location no. 4 & 6 were in the upwind direction. At these three locations; no major air polluting activity viz. Garbage burning, land preparation etc. was observed. These monitoring locations showed an increasing trend in downwind direction.

Location no.	Distance from Rajakhera town	Date of monitoring	PM_{10}	$PM_{2.5}$
4	7kms	9.7.2021	99	48
		10.7.2021	75	33
6	4kms	9.7.2021	155	76
		10.7.2021	77	37
2	0 kms	7.7.2021	200	92
		8.7.2021	254	118

The Ambient Air Monitoring reports are enclosed as **Annexure-V.**

The Google Earth map showing the AAQM station locations is given below:



The committee considered $PM_{2.5}$ data derived from satellite Aerosol Optical Data (AOD). The data has been provided by Prof (Dr) Sagnik Dey, Project Co-ordinator of "Satellite based near real time monitoring of $PM_{2.5}$ at National Scale for Air Quality Management" IIT Delhi. The data for Dholpur & Rajakhera for the year 2019 & 2020 is given below:

City/Tehsil	2019			2020		
	Min	Max	Avg	Min	Max	Avg
Rajakhera (GPS location 26.8968,78.1705)	38.55	154.16	80	27.22	214.26	91
Dholpur (GPS location 26.6968,77.8925)	35.45	145.33	75	22.38	121.46	62

The data reveal that the annual average $PM_{2.5}$ concentration at Rajakhera & Dholpur was exceeding the annual standard (as given under NAAQS, 2009) of 40µg/m^3 for both the years i.e. 2019 & 2020. The probable reason of higher values of $PM_{2.5}$ at Rajakhera may be various anthropogenic activities like industrial activities, developmental activities, agricultural activities, use of biomass in the rural setting, contribution of crustal particulate matters due to loose soil characteristics, and others.

2.2 Estimation of daily pollution load from single brick kiln

Source emission monitoring was not performed as the brick kilns of Rajakhera block were non-operational due to ongoing rainy season; Considering this, the source emission monitoring data of FCBTK based kilns operating on coal & husk at Aligarh (Uttar Pradesh) was considered. Copy of the data set is enclosed as **Annexure-VI.** This monitoring was carried out by CPCB in June 2021. Based on this data, daily pollution load from single brick kiln was estimated. The calculated PM emission load with 17% O_2 correction for single brick kiln is **0.705 Tons/day.**

The detailed information is given as below:

Sr. No.	Parameter	Value
1.	Type of Fuel Used	Coal + Husk
2.	Monitored at Port Hole Height , m	3.0
3.	Internal diameter of Stack, m	3.0
4.	Flue Gas Velocity, m/s	3.0
5.	Ambient Temp., K	311
6.	Flue Gas Temp., K	350
7.	Actual PM Concentration, mg/Nm^3	273
8.	Corrected PM Concentration at 17% O_2, mg/Nm^3	420
9.	Normalized Flow Volume at 25°C, (Nm^3/day)	16,77,818
10.	Actual PM Emission Load, kg/day	458
11.	Corrected PM Emission Load at 17% O_2, kg/day	**705**

3.0 Estimation of Existing Pollution Load w.r.t $PM_{2.5}$

For the estimation of the pollution load w.r.t. $PM_{2.5}$; total area in which brick kilns are operational, mixing height of the area and $PM_{2.5}$ concentration for the particular months were considered. For $PM_{2.5}$ data, Aerosol Optical Density (AOD) data was considered.

- Total area **(a)** : **380 km^2** (All the 103 brick kilns operational in the radial distance of 11 kms from the centre of Rajakhera village)

- Average atmospheric mixing height during a particular month in km **(b)** : As there is meteorological station nearby district-wise meteorological information available online for2015 at https://urbanemissions.info/blog-pieces/india-meterology-bydistrict/ was considered for monthly mixing height. The mixing height was considered same for 2019 & 2020 due to unavailability of the yearly meteorological data. The meteorological data is as tabulated below:

Month	% Frequency of Mixing height in different ranges					Weighted mixing height in KMs
	<100	100-500	500-1000	1000-2000	>2000	
Considered Average height, m	50	300	750	1500	2000	
Jan	66.12	15.45	13.17	5.24	0	0.257
Feb	63.69	13.095	9.52	12.5	1.19	0.354
Mar	58.1989	11.69	8.1989	17.6075	4.3	0.476
Apr	55	10.13	4.166	9.72	20.97	0.654
May	51.47	11.55	3.22	4.3	29.43	0.738
Jun	36.94	17.638	5.13	10	30.277	0.865
Jul	20.43	31.45	12.5	25.67	9.94	0.782
Aug	32.25	30.24	12.7	24.59	0.134	0.574
Sep	55.55	12.777	4.86	17.91	8.88	0.549
Oct	63.3	9.94	3.897	17.069	5.779	0.462
Nov	68.75	11.66	8.33	9.86	1.38	0.307
Dec	68.41	15.32	13.84	2.419	0	0.220
Source: https://urbanemissions.info/blog-pieces/india-meterology-bydistrict/						

- Total volume of Air in the area of concern during a particular month in KM^3 **(C)** : **a x b**

- Average $PM_{2.5}$ concentration for a particular month in kg/km^3 **(d):**

For understanding the ratio of AOD data to CAAQMS data, $PM_{2.5}$ values of 06 cities for the year 2019 were analysed for the ratio of CAAQMS to AOD. The ratio is tabulated below:

S.NO.	City	CAAQMS/AOD ratio of 2019
1.	Jhind	1.08
2.	Bhiwani	1.12

3.	Agra	0.96
4.	Muzaffarnagar	1.07
5.	Sonipat	0.994
6.	Bulandsahar	0.998

As the average ratio is **nearly 1** and in the case of unavailability of the ambient air quality data of the Rajakhera village; AOD data was considered for the calculation.

The AOD derived $PM_{2.5}$ values for the year 2019 & 2020 are as tabulated below:

Month	**$PM_{2.5}$ Values ($\mu g/m^3$)**	
	2019	**2020**
January	154	152
February	95	122
March	60	54
April	61	51
May	64	62
June	53	44
July	43	33
August	39	27
September	39	59
October	80	114
November	126	165
December	150	214

Therefore, Total estimated pollution load of $PM_{2.5}$ **(X) = c x d**

Month	**$PM_{2.5}$ Pollution load (MT/Month)**	
	2019	**2020**
January	15	15
February	13	16
March	11	10
April	15	13
May	18	18
June	17	14
July	13	10
August	8	6
September	8	12
October	14	20
November	15	19
December	13	18

3.1 Estimation of total assimilative capacity w.r.t. PM_{10}

Total volume of Air in the district during a particular month in km^3 **(c)**

Particulate Matter (PM_{10}) concentration in ambient air as per NAAQ standard, 2009: 100µg/m^3 i.e. **100 Kg/Km^3** (Ref. Air Quality Index/NAAQ Standards)

Therefore, total assimilative capacity w.r.t. PM_{10} in ambient air of the area during a particular month (**y**): **C x 100 = y** Kgs

2019 & 2020	
Month	**Total Assimilative Capacity in MT**
January	10
February	13
March	18
April	25
May	28
June	33
July	30
August	22
September	21
October	18
November	12
December	8

3.2 Estimation of total supportive capacity based on PM_{10}

Total Supportive Capacity **(z)** = Total Assimilative Capacity **(y)**
(-) Total Estimated Load (PM_{10}) **(x)**

As for the estimation of the pollution load, Aerosol Optical Density (AOD) data of $PM_{2.5}$ was considered. The $PM_{2.5}$ values have been extrapolated to PM_{10}. The month-wise ratio of PM_{10} to $PM_{2.5}$ for the year 2019 & 2020 was calculated based on the nearest manual Ambient Air Quality Monitoring station i.e. Agra city (35 kms from Rajakhera village). The monitoring data for April & May 2020 were not available due to non-operation of manual station during COVID restriction. For these 02 months, average annual ratio was considered which is 1.57.

The estimated total supportive capacity for the year 2019 is

2019					
Month	**Pollution load in MT $PM_{2.5}$**	**Monthly factor of $PM_{10}/PM_{2.5}$**	**Pollution load in MT w.r.t. PM_{10} (x)**	**Total Assimilative capacity in MT w.r.t. PM_{10} (y)**	**Total Supportive capacity in MT w.r.t. PM_{10} (z)**
January	15	1.4	21	10	-11
February	13	1.34	17.42	13	-4.42
March	11	1.93	21.23	18	-3.23
April	15	2.63	39.45	25	-14.45
May	18	2.63	47.34	28	-19.34
June	17	2.86	48.62	33	-15.62
July	13	1.68	21.84	30	8.16
August	8	1.28	10.24	22	11.76
September	8	1.32	10.56	21	10.44
October	14	1.37	19.18	18	-1.18
November	15	1.18	17.7	12	-5.7
December	13	1.2	15.6	8	-7.6

The estimated total supportive capacity for the year 2020 is

2020					
Month	**Pollution load in MT $PM_{2.5}$**	**Monthly factor of $PM_{10}/PM_{2.5}$**	**Pollution load in MT w.r.t. PM_{10} (x)**	**Total Assimilative capacity in MT w.r.t. PM_{10} (y)**	**Total Supportive capacity in MT w.r.t. PM_{10} (z)**
January	15	1.23	18.45	10	-8.45
February	16	1.46	23.36	13	-10.36
March	10	1.62	16.2	18	1.8
April	13	1.57	20.41	25	4.59
May	18	1.57	28.26	28	-0.26
June	14	2.56	35.84	33	-2.84
July	10	1.81	18.1	30	11.9
August	6	1.24	7.44	22	14.56
September	12	1.59	19.08	21	1.92

October	20	1.65	33	18	-15
November	19	1.3	24.7	12	-12.7
December	18	1.26	22.68	8	-14.68

The above analysis indicates that some supportive capacity may be available during the monsoon months, i.e. July, August & September.

3.3 Assessment of restriction of brick kiln operation w.r.t. total Supportive capacity available

Based on the above estimation of pollution load, total assimilative & supportive capacity of the Rajakhera block, decision on restriction of brick kiln operation may be planned to sustain the supportive capacity available. For this the factor of pollution load i.e. **0.705 Tons/day/brick kiln** (Corrected PM emission load at 17% O_2) has been considered.

The year-wise assessment for restriction of brick kiln operation w.r.t. supportive carrying capacity is as tabulated below:

2019		**Particulates contribution of single brick kiln in Tons/day**	**No. of brick kilns operation needs to be restricted w.r.t. the supportive capacity available**
Month	**Supportive capacity available in MT w.r.t. PM_{10}**		
January	-11	**0.705**	-16
February	-4.42		- 6
March	-3.23		- 5
April	-14.45		- 20
May	-19.34		**- 27**
June	-15.62		- 22
July	8.16		+12
August	11.76		+17
September	10.44		+15
October	-1.18		- 2
November	-5.7		- 8
December	-7.6		- 11

2020		Particulates contribution of single brick kiln in Tons/day	No. of brick kilns operation needs to be restricted w.r.t. the supportive capacity available
Month	**Supportive capacity available in MT w.r.t. PM_{10}**		
January	-8.45	**0.705**	-12
February	-10.36		-15
March	1.8		+3
April	4.59		+7
May	-0.26		0
June	-2.84		-4
July	11.9		+17
August	14.56		+21
September	1.92		+3
October	-15		**-21**
November	-12.7		-18
December	-14.68		-21

NOTE:

i. *The numerical value with (-) symbol indicates the number of brick kilns whose operation needs to be restricted.*

ii. *The numerical value with (+) symbol indicates the number of brick kilns that can be allowed other then the operational ones.*

Perusal of above table indicated that brick kilns may be allowed to operate during monsoon period (during July-September), if convenient to brick kiln manufacturers.

4.0 Sensitivity Analysis: Prediction of Cumulative Impact of all the Existing Brick Kilns

The committee made an effort to predict the cumulative impact of all the 103 brick Kilns in Rajakhera Block on the Air Quality of Rajakhera Village

1.0 Introduction

Cumulative impact of all the 103 brick kilns presently operating in the Rajakhera Block has been predicted using widely accepted air quality model (AERMOD) under certain critical meteorological conditions (represented by uni-directional flow with low wind) and with assumption that all the brick kilns are of same capacity and similar amount of emissions are released from all the stacks.

The air quality model requires inputs with respect to stack details with flue gas characteristic, and meteorological data (like wind speed, wind direction, relative humidity, ambient temperature etc.)

which predicts the resultant air quality in the region/places (receptor) of interest.

The details of model input data with respect to emission sources, meteorological data and predicted resultant air quality in the Rajakhera village is given in the following sections.

2.0 Details of Brick Kilns and Meteorology

2.1 Distribution of Brick Kilns in the Rajakhera Block

At present, there are total 103 brick kilns in the Rajakhera Block. Distribution of all the brick kilns is depicted in **Fig. 1**. These kilns are further divided in three clusters as C1, C2 & C3 based on their location in different directions with respect to Rajakhera village. Cluster C1 (North-West Sector) has most number of brick kilns 62, whereas Cluster C2 (West-South West Sector) has 21 and Cluster C3 has 20 brick kilns. These kilns are located within about 11 km radius from the center of Rajakhera village.

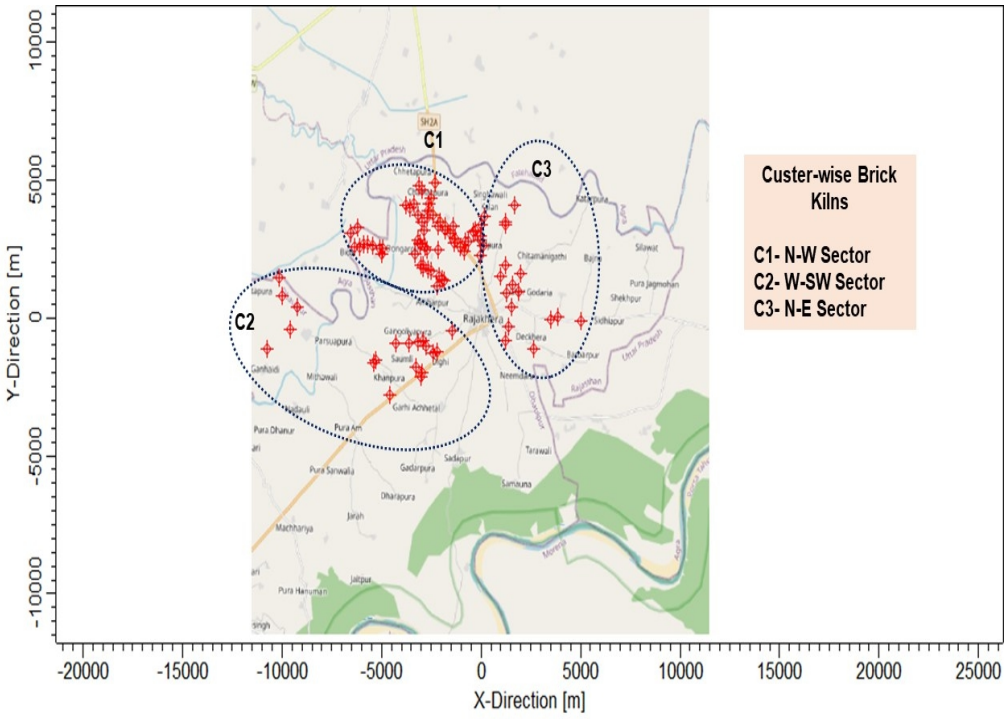


Fig. 1: Distribution of 103 Brick Kilns in the Rajakhera Block, Dholpur District

2.2 Stack and Likely Emission details of Brick Kilns

At present all the brick kilns are non-operational. In the absence of actual field data of the brick kilns in the Rajakhera Block, stack emission data of similar type of brick kilns (FCBTK) located in Aligarh district has been considered. Aligarh is aerially about 110 km from Rajakhera village. Stack monitoring in the brick kilns was done during June 2021 by the team of CPCB. Stack monitoring data of 8 brick kilns is considered and average values are used for the present analysis. Stack monitoring was done at an average height of about 3 meters from the ground, where portholes are provided in the brick kiln stack. The flue gas exit velocity observed at that level has been calculated at the top of the stack by following the standard procedure. Details of stack and flue gas characteristics considered in the air quality modeling are given in **Table 1.** Two emission scenarios are considered taking actual PM concentration and PM level corrected to 17% O_2 levels.

Table 1: Details of Stack and Flue Gas Characteristics used as Model Input Parameters (based on Actual Data Monitored for 8 Brick Kilns at Aligarh)

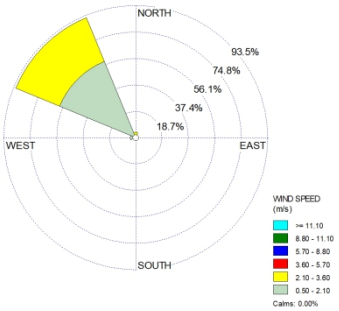
Sr. No.	Parameter	Value
	Type of Fuel Used	Coal + Husk
A.	**Monitored at Port Hole Height (3.0 m)**	
1.	Diameter of Stack, m	3.0
2.	Flue Gas Velocity, m/s	3.0
3.	Flue Gas Temp., K	350
4.	Actual PM Concentration, mg/Nm^3	273
5.	Corrected PM Concentration at 17% O_2, mg/Nm^3	420
6.	Normalized Flow Volume at 25°C, (Nm^3/day)	16,77,818
B.	**Calculated/Expected at the Stack Top (30.0 m) and used in Modeling Exercise**	
1.	Top Diameter (m)	1.0
2.	Exit Flue Gas Velocity (m/s) (corresponding to top diameter)	27.0
3.	Exit Flue Gas Temperature (K)	350
4.	Stack Height, (m)	30
5.	Actual PM Emission Load, kg/day	458

6.	Corrected PM Emission Load at 17% O_2, kg/day	705
7.	Actual PM Emission Rate, g/s	5.30
8.	Corrected PM Emission Rate at 17% O_2, g/s	8.16
9.	Daily Operational Schedule	24 hrs Continuous
10.	Total Number of Brick Kilns in Rajakhera block	103

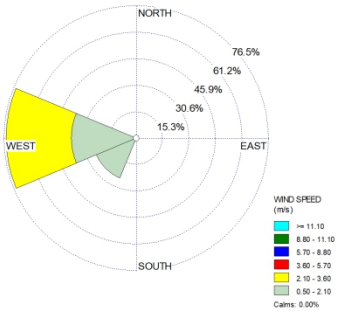
2.3 Meteorological Data

Region specific meteorological data was not available for Rajakhera Block/ Dholpur district, therefore, hourly surface meteorological data collected from the continuous ambient air quality monitoring station (CAAQMS) located at Sanjay Palace, Agra has been used. Agra is about 35 km from Rajakhera village. As most of brick kiln are expected to operate from November-December onwards, typical meteorological data for the month of December is considered. The meteorological pre-processor, AERMET has been setup and run for one day. The meteorological parameters used in the AERMET are wind speed, wind direction, relative humidity, ambient temperature, solar radiation, atmospheric pressure and precipitation. In addition to that, upper air estimator, an in-built feature of AERMOD, is used to estimate the upper air profile of meteorological parameters.

To present the worst case scenario (uni-direction wind flow with low wind speed), the collected meteorological data has been assumed into three uni-directional directions and one with the wind direction spread equally in all the 8 directions. Wind rose for 4 meteorological scenarios are shown in **Fig. 2**. The uni-directions are selected with a view to consider brick kilns in the upwind direction of Rajakhera village.



Scenario 1- NW Sector



Scenario 2- W-SW Sector

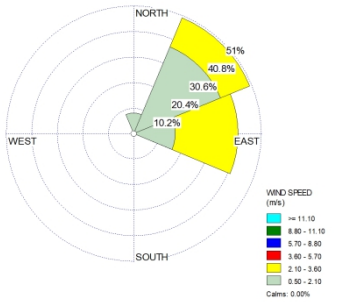
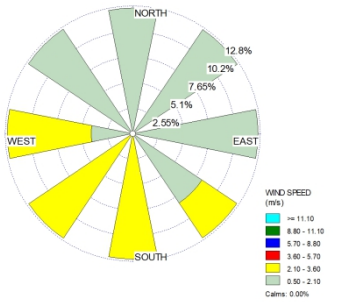
Dominant Wind Speed- 0.50-2.10 m/s	Dominant Wind Speed- 0.50-2.10 m/s
	
Scenario 3- N-E Sector	Scenario 4- All Directions
Dominant Wind Speed- 0.50-2.10 m/s	Dominant Wind Speed- 0.50-2.10 m/s

Fig. 2: Assumed Unidirectional Wind-rose under Different Meteorological Scenarios (Applicable for all 103 Brick Kilns)

3.0 Prediction of Impact due to 103 Brick Kiln Emissions on Rajakhera Village

3.1 Modeling Domain keeping Rajakhera Village as Receptor

Air quality modelling has been carried out to predict the likely impact of all the 103 brick kilns operation on the ambient air quality of Rajakhera village. The receptor grid is defined for an area of 11 km x 11 km with Rajakhera village as Centre and grid cell size of 0.5 km x 0.5 km, as shown in **Fig. 3**. Total 2025 receptor points are defined to capture the impact of emission from brick kiln stacks.

Further, 17 discrete receptor points are chosen within 2 km x 2 km region and in all the directions of the Rajakhera village area to predict the PM pollutant concentrations emitted from the brick kiln stacks. The discrete receptor locations are shown in **Figs. 4.**

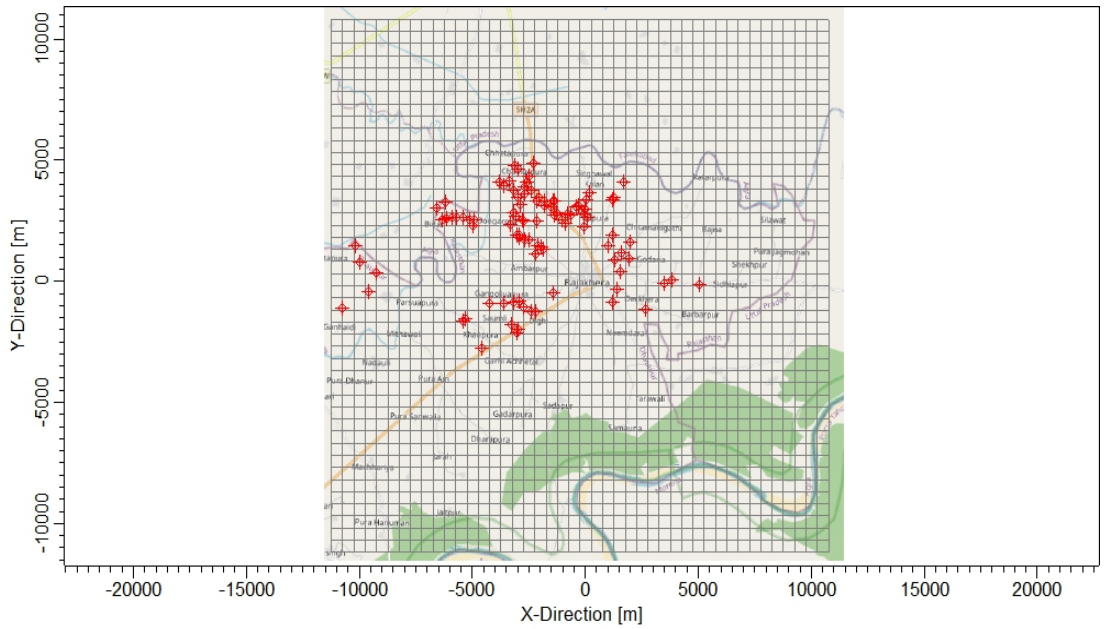


Fig. 3: Receptor Grid Points within 11 km x 11 km area keeping Rajakhera Village as the centre

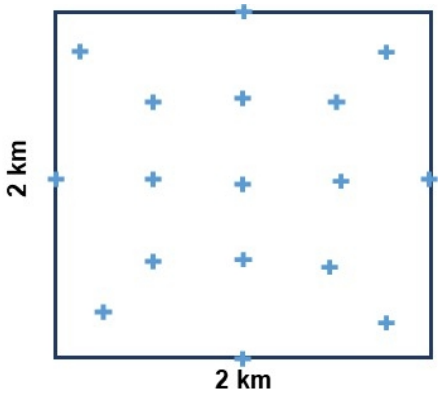


Fig. 4: Discrete Receptor Points for Rajakhera Village (8 directions with 500 m interval + Centre)

3.2 Air Quality Modelling

Air quality model, AERMOD is used to predict the pollutant concentration emitted from multiple stacks as described in previous sections. The model is setup and run using input data of sources, emissions and meteorology. The model is setup keeping Rajakhera village as centre of modelling domain (11 km x 11 km) using actual UTM coordinate system which is converted to local coordinates for better understanding. Individual stacks are defined in the model and grouped altogether to predict the cumulative impact at Receptor Points under different meteorological and emission scenarios.

The cumulative impact of all the 103 brick kilns has been predicted under 4 meteorological scenarios (3 uni-directions and multiple directions) for 2 emission scenarios (actual and corrected PM

emissions). The air quality modelling results are presented in the following sub-sections.

3.2.1 Cumulative Impact of 103 Brick Kilns for Actual PM Emission Scenario (458 kg/day)

24-hourly predicted PM Concentration Isopleths for actual PM emission scenario (458 kg/d or 5.30 g/s) considering different wind flow conditions is presented through **Figs. 5-8**, respectively for N-W sector, W-SW sector, N-E sector and multiple directions.

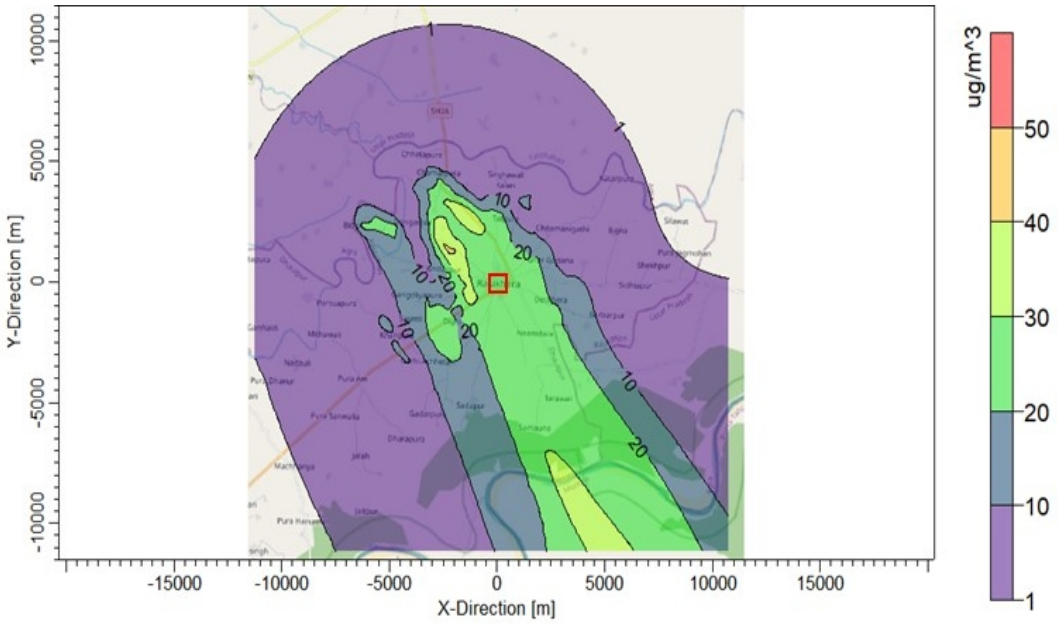


Fig. 5: Predicted PM Concentrations from All Brick Kilns (103) with Dominant Wind in North-West Sector in the Study Area

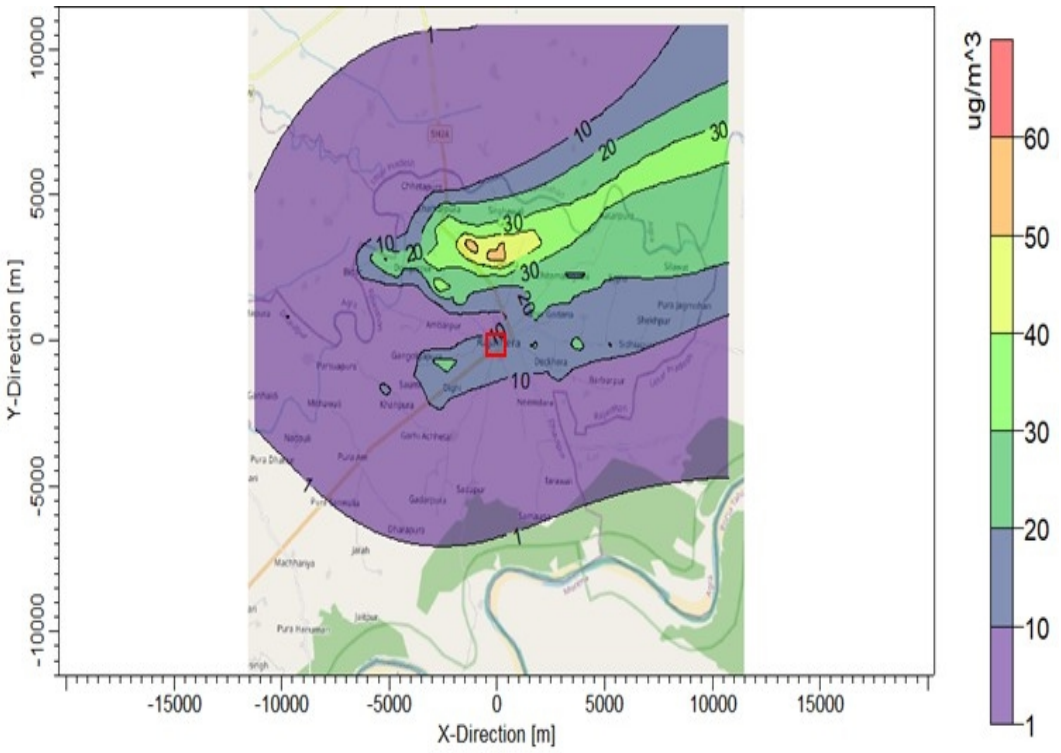


Fig. 6: Predicted PM Concentrations from All Brick Kilns (103) with Dominant Wind in West-South West Sector in the Study Area

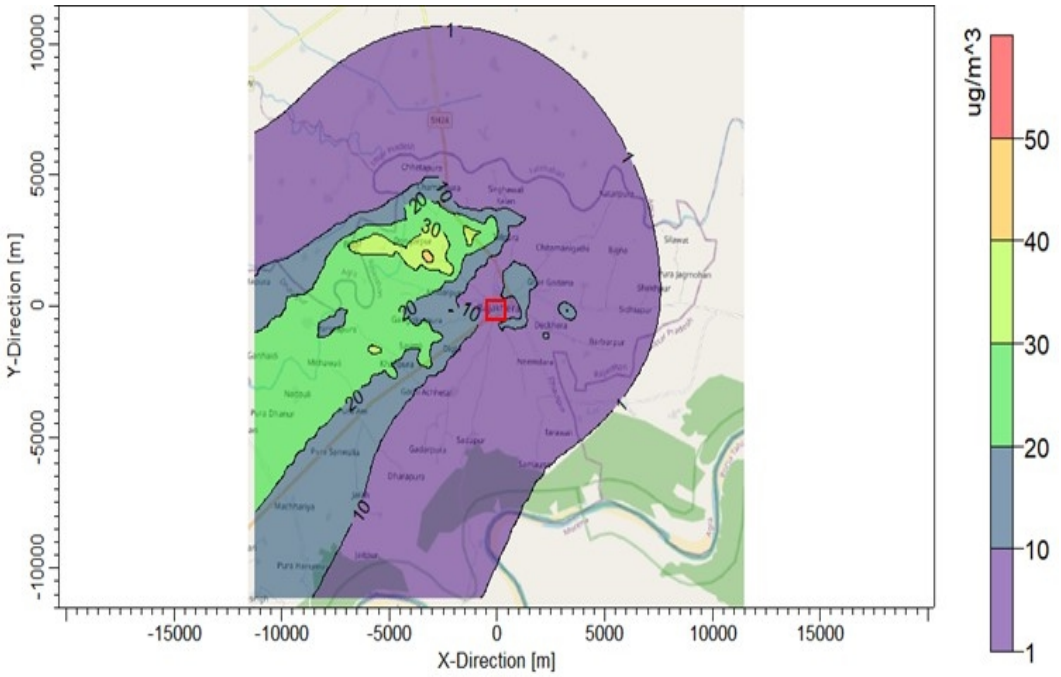


Fig. 7: Predicted PM Concentrations from All Brick Kilns (103) with Dominant Wind in North-East Sector in the Study Area

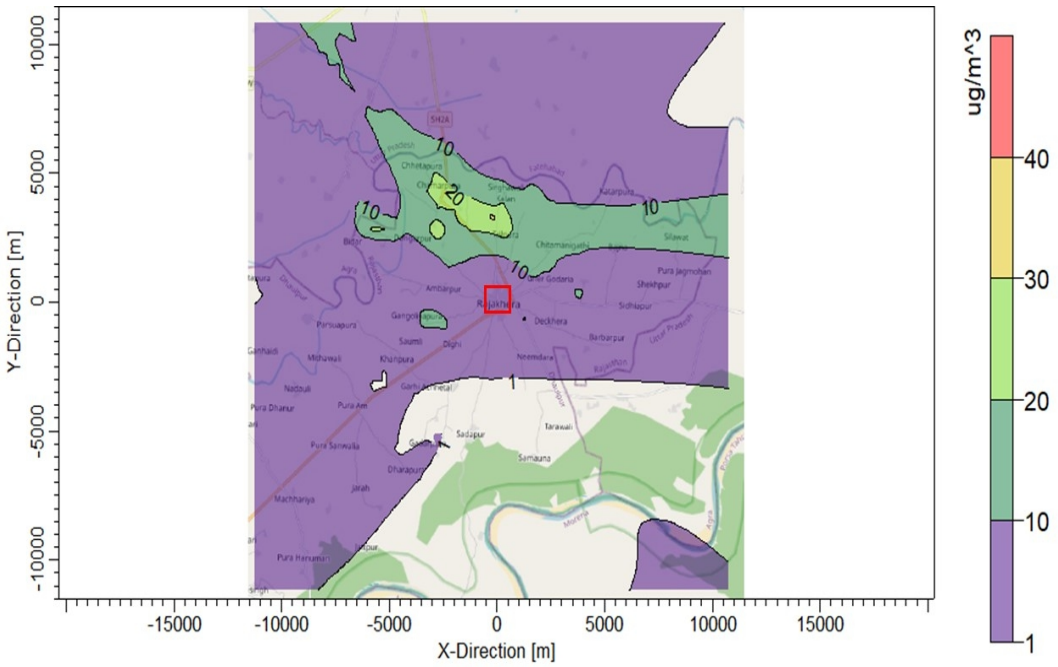


Fig. 8: Predicted PM Concentrations from All Brick Kilns (103) with Wind equally distributed in All Directions in the Study Area

3.2.2 Cumulative Impact of 103 Brick Kilns for Corrected PM Emission Scenario (705 kg/d)

Similarly, 24-hourly predicted PM concentration isopleths for corrected PM emission scenario (705 kg/d or 8.16 g/s) considering different wind flow conditions is presented through **Figs. 9-12**, respectively for N-W sector, W-SW sector, N-E sector and multiple directions.

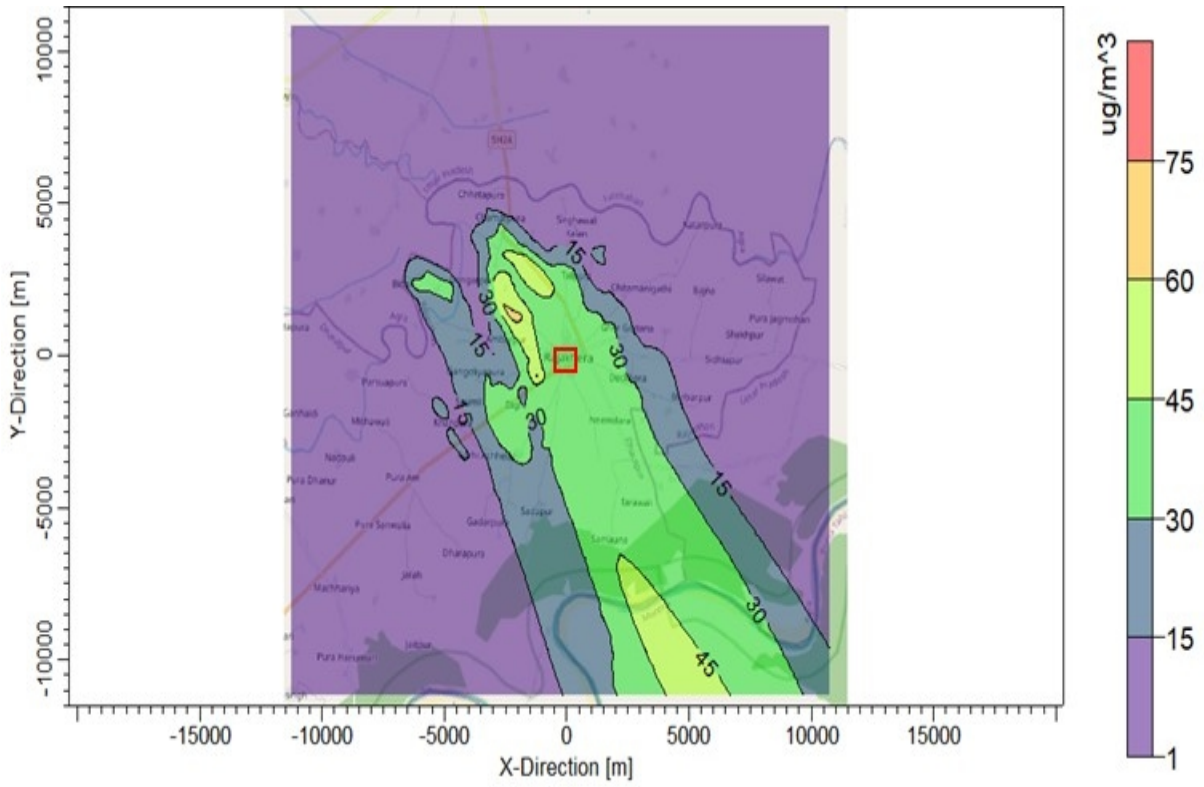


Fig. 9: Predicted PM Concentrations from All Brick Kilns (103) with Dominant Wind in North-West Sector in the Study Area

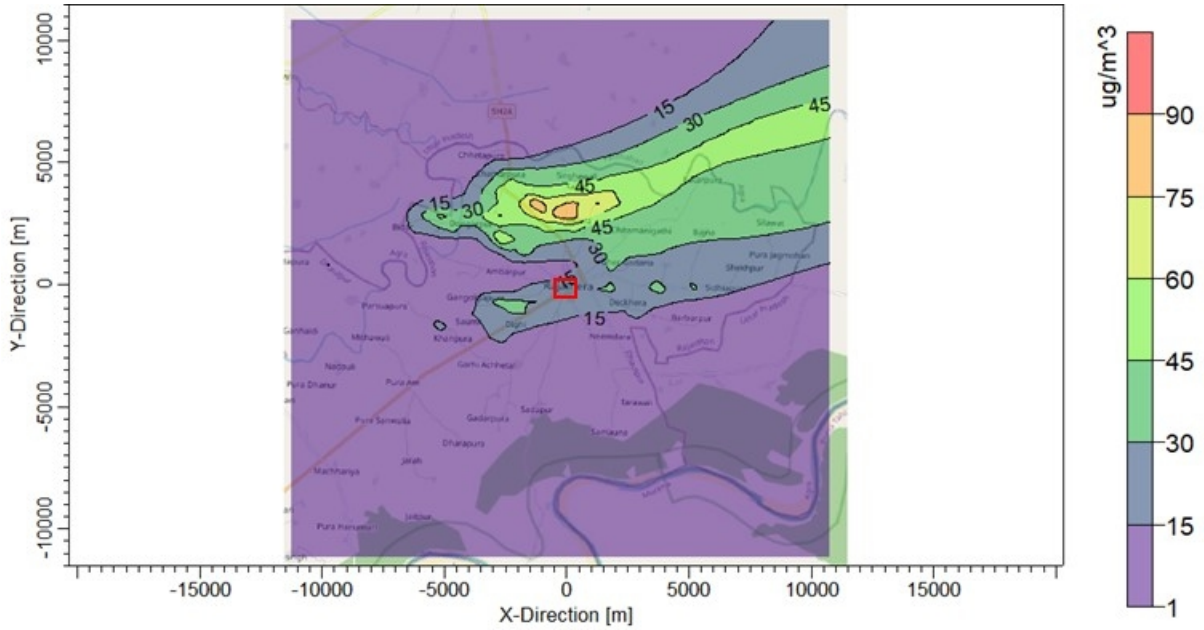


Fig. 10: Predicted PM Concentrations from All Brick Kilns (103) with Dominant Wind in West-South West Sector in the Study Area

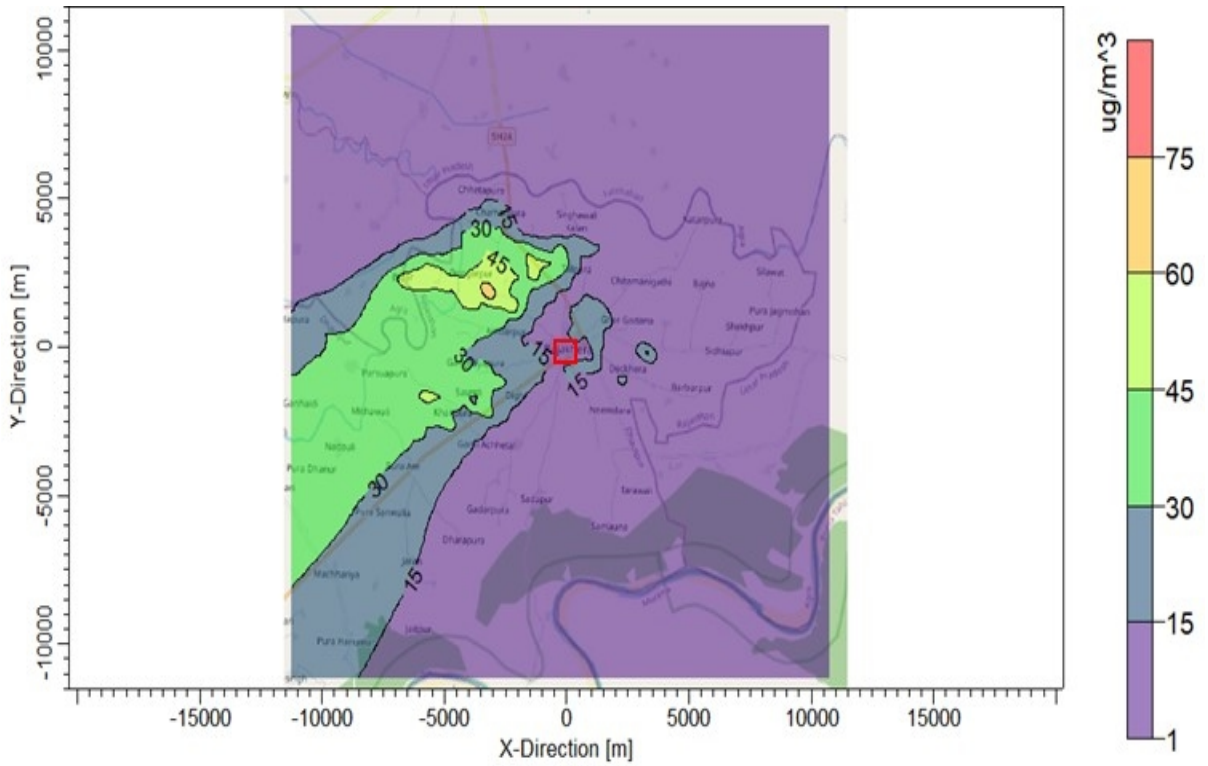


Fig. 11: Predicted PM Concentrations from All Brick Kilns (103) with Dominant Wind in North-East Sector in the Study Area

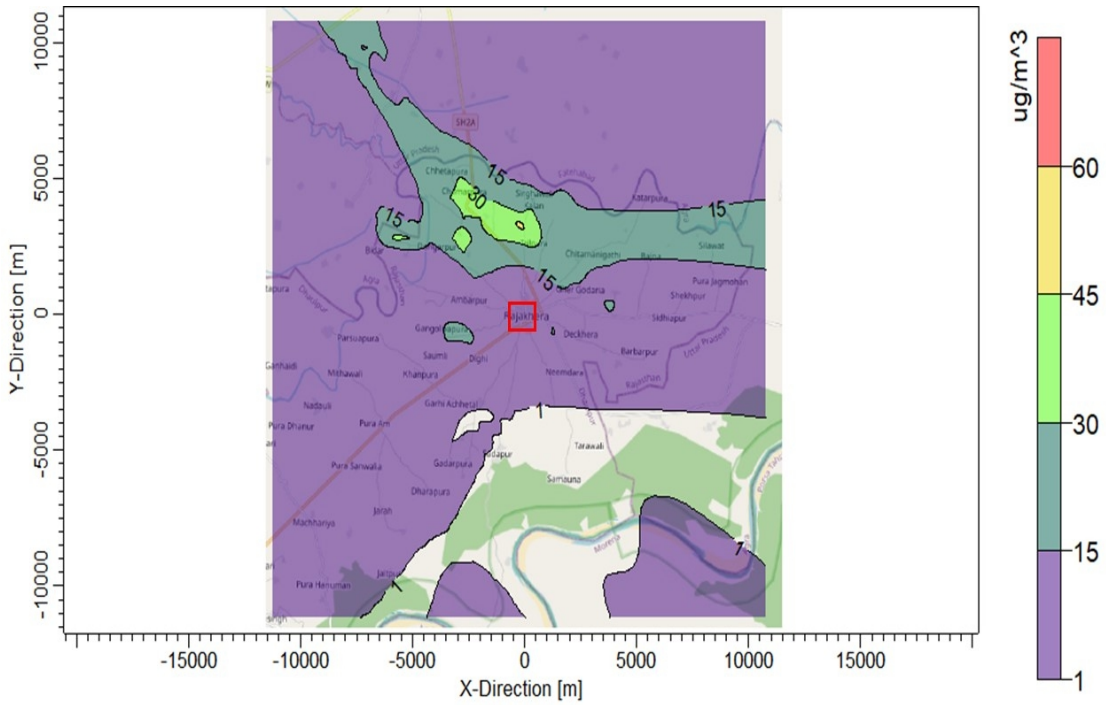


Fig. 12: Predicted PM Concentrations from All Brick Kilns (103) with Wind equally distributed in All Directions in the Study Area

3.3 Predicted PM Concentration Levels at Rajakhera Village

3.3.1 Cumulative Impact of 103 Brick Kilns

24 hourly predicted PM concentrations levels in Rajakhera Village under 2 emission and 4 meteorological scenarios (as observed in isopleths) are summarized in **Table 2**. Further, for better understanding predicted PM levels (minimum, maximum and average values) at discrete receptor points of Rajakhera village are included.

Depending upon the predominant wind direction, the brick kilns in the upwind direction of the village will have more impact on the air quality of the village. *Maximum impact is predicted under the worst meteorological condition (wind from N-W direction) to be 24 µg/m^3 for actual emission scenario and 36 µg/m^3 for combustion corrected emission scenario.*

Table 2: Predicted 24 hourly PM Concentrations Levels in Rajakhera Village for Different Emission and Met Scenario

Sr. No.	PM Emissions / Meteorological Scenario	No. of Brick Kilns likely to impact	PM Conc. Range based on Isopleths (µg/m^3)	PM Conc. (µg/m^3)		
				Min.	Max.	Avg.
1.	**Actual Emission Scenario (458 kg/d or 5.30 g/s)**					
a.	North-West (N-W) Sector	62	20-30	23	24	**24**
b.	West-South West (W-SW) Sector	21	10-20	9	18	**13**
c.	North-East (N-E) Sector	20	1-10	9	10	**9**
d.	All Directions	103	1-10	3	5	**4**
2.	**Corrected Emission Scenario (705 kg/d or 8.16 g/s)**					
a.	North-West (N-W) Sector	62	30-45	35	37	**36**
b.	West-South West (W-SW) Sector	21	15-30	13	28	**20**
c.	North-East (N-E) Sector	20	1-15	14	16	**15**
d.	All Directions	103	1-15	5	8	**6**

3.3.2 Impact of Single Brick Kiln

Further, impact of a single brick kiln is predicted under the similar situation/scenario. It is predicted that 24 hourly PM concentration from single brick would be about 2.32 µg/m^3 and 3.62 µg/m^3 for actual and corrected PM emissions scenario at a distance of 500 m from the brick kiln. The predicted PM levels at different distances are summarized in **Table 3**.

Table 3: Predicted 24 hourly PM Concentration from Single Brick Kiln at different Downwind Distances

Distance in Downwind Direction	PM Concentrations (µg/m^3)			
	Actual Emission Scenario (458 kg/d or 5.30 g/s)		Corrected Emission Scenario (705 kg/d or 8.16 g/s)	
	N-W Sector Wind Flow	All Directions Wind Flow	N-W Sector Wind Flow	All Directions Wind Flow
500 m	**2.32**	0.01	**3.62**	0.02
1 km	1.28	001	3.18	002
1.5 km	0.99	0.01	2.10	0.02
2 km	**0.84**	**0.01**	**1.37**	**0.01**
2.5 km	0.59	0.01	1.13	0.01
3 km	0.47	0.01	1.06	0.01
5 km	0.40	0.00	0.66	0.01
10 km	0.36	0.00	0.56	0.00

Limitation: *In the absence of actual stack emission data for the brick kilns and meteorological data of the Rajakhera Block, similar/corresponding data for the nearby brick kilns in Aligarh region and met data of Agra has been used in the air quality modeling. Therefore, the air quality prediction results should be treated as indicative values. It is recommended that this exercise need to be updated for the brick kilns of Rajakhera block adopting "Guidelines on Methodologies for Source Emission Monitoring" published by CPCB and actual meteorological data for the Rajakhera region.*

Based on the supportive capacity estimation and the sensitivity analysis outcomes; regulatory authority may take decision on the month-wise restriction on the operation of the brick kilns situated on the upwind direction i.e. North, North-West considering the distance from the Rajakhera village.

5.0 Recommendations

5.1 General Recommendations

The particulate matter emissions from brick kiln stacks are primarily due to incomplete combustion of coal or biomass fuels, leading to formation of black colored soot particles, which form majority of the particulate matter in the stack emissions. Coal contains about 15-35% volatile matter, which is lower chain of hydrocarbons. This volatile matter gets released within seconds of firing the coal in the kiln. For combustion of this volatile matter, both primary air (from below the coal) and secondary air (above the coal) are required in appropriate proportion and quantity. If the air is not provided for combustion, part of this released volatile matter does not get burned or gets only partially burnt, which gives release to unburnt hydrocarbons (HC) and Carbon monoxide (CO). The unburnt hydrocarbons, once cooled to about below 600^{o}C, get condensed and form soot particles. This is an irreversible reaction and soot once formed, cannot be combusted. If the soot formation could be prevented or substantially reduced, the particulate matter emissions from brick kilns can be substantially reduced. Reduction in soot formation also means reduction in coal consumption.

The conversion from FCBTK to zig-zag technology helps in improving the combustion by providing better mixing of fuel and air and longer high temperature zone to burn off the volatile matter resulting in the reduction of particulate matter emissions. The results from various previous monitoring studies show significant reduction in particulate matter emissions in stack gases in zig-zag kilns as compared to FCBTK:

In this regard, specific opinion/suggestion with a road map regarding sustenance operation of brick kilns to make viable in Rajakhera block are as under:

(A) IMMEDIATE MEASURES (0-1 years for implementation)

1. As an immediate measure to reduce emission of particulate matter from stack, path length of flue gases may be increased so that most of SPM may settle due to action of gravity. As it will also bring down the temperature of the flue gases, an induced fan will need to be installed before stack. Path length may be increased by zig-zag setting of the bricks in FCBTK or by diverting the flue gases to a long nala (channel/path) before entering into the stack. This nala will be connected to stack at the other end.

2. It is observed that pollution level during rainy season is almost negligible and keeping this in mind, brick kilns may be allowed to operate during rainy season (July to September) also if they have proper shed arrangements and willing to do so. Shed will also be helpful in reducing the fugitive dust emissions and fuel requirement. Shed will also reduce heat losses which will increase the thermal efficiency of the kiln.
3. Rajasthan State Pollution Control Board must fix the length and width of the kiln. It will restrict the enormously high production of bricks (more than 50,000 bricks per day) as in practice by most of the Brick kiln operators. This will results in lower emission load and improvement in carrying capacity.
4. Brick kilns manufacturers association may be asked to conduct innovative studies to meet the emission norms for the present FCBTK type brick kilns by adopting fueling firing mechanism, modifying the path length of flue gas flow, installing appropriate pollution control system (like wet scrubber system) before the flue gas exit the chimney. This may be tried for different types of fuels being used in the kilns.

(B) SHORT TERM MEASURES (within 3 years)

The above immediate measures can effectively control the SPM level up to 20%, however, these are not the adequate/permanent methods to control the emission of finer particulate matter (PM_{10} and $PM_{2.5}$) which are escaped from stack due to high temperature of flue gas. Therefore, following short term measures are recommended and must be implemented (within 3 years) for further reduction in the stack emissions.

1. Conversion of FCBTK kilns to zig-zag kilns.
2. Installation of a proper air pollution control device like wet scrubber for control of PM_{10}, $PM_{2.5}$ and greenhouse gases emission due to burning of coal is suggested. Wet scrubber is the most trusted,

proven, efficient and sustainable technology for control of particulate matter and scrubbing of greenhouse gases. This device can be helpful to reduce SPM below 50 mg/Nm^3.

Suitability of Wet Scrubber Technology

During firing of green bricks in zig-zag fired induced draft brick kilns a significant concentration of moisture is carried away by the flue gas. Since the temperature of flue gases in the stack of kilns is generally between 50-100^oC, which result in condensation of moisture in flue gases and at times it is required to be drained from the bottom of the ID fan which otherwise affects performance of the fan efficiency besides corrosion of fan. The flue gas also contains SO_2 due to sulphur in coal. In view of this, the wet scrubber would be the suitable option as air pollution control device which can simultaneously remove particulate matter and gaseous pollutant like SO_2.

It is also brought out that the chimney in induced draft brick kiln is either installed in the central island or along the outer trench wall of the kiln i.e. outside the kiln. Whereas the installation of air pollution control device would be easy with the chimney outside the kiln, installation of APCD in the central island is expected to pose several problems and would require an innovative design solution. The water used for scrubbing of gases would be required to be neutralized using alkaline material, which can further be recirculated or can be used in preparing clay mix for brick moulding. However, before its adoption at wider scale, the basic design parameters are required to be confirmed/checked and suitability of the system be assessed by demonstrating at two or three locations.

(C) MID-TERM MEASURES (3-10 years)

Following mid-term measures are recommended for further improvement in the brick industry using high draught technology for implementation in next 3-10 years depending on the need, infrastructure availability and expenditure involved:

1. The use of internal fuel is recommended which is a well proven technology to control particulate matter and gaseous emissions from brick kiln. It can reduce or exempt the use of external fuel demand for firing of bricks. Materials like agricultural residues, fly ash, rice husk, mustard husk, cow dung, reject coal, coconut fiber or any other non-hazardous material can be used as internal fuel. Use of Agro-residue as internal fuel can also reduce clay consumption by 30-40% and reduce gaseous emission. Agriculture residue as an internal fuel can be recommended after a proper scientific and technical study. Although use of coal as an internal fuel is a well-established technology in other countries. However, in India, it is in a very primitive stage and requires detailed study. Use of internal fuel in zig-zag kilns especially when APCDs are in place, should be promoted. Further, use of internal fuel is not possible in all regions because the characteristics of brick earth is different in all over the country and having mixing problems due to low bonding capacity of the brick earth. The other main constraints in implementation of this technology are mechanized and electricity powered extruders, pug mills, power connection, huge investment etc.
2. Agriculture residue can be used in zig-zag brick kilns as external fuel only after converting to briquettes for the reduction in particulate matter and gaseous emissions from flue gas. Although its use depends on the availability of materials and briquettes making plant nearby.
3. Manufacturing of Resource Efficient Bricks (REBs) products such as perforated bricks, hollow bricks and blocks. These products save fuel up to 30 % resulting reduction in pollutants emission up to 30 %. REBs also reduce clay up to 50 % for their manufacturing apart from saving of other resources during use as walling unit in buildings. Although this is possible only after mechanization of brick kiln. Bureau of Energy Efficiency (BEE) is

supporting REBs technology and launching a special “E3” mark to promote the manufacturing and marketing of the REBs.

4. Use of auto coal/fuel feeding system to standardize the firing practice at optimum level.
5. The introduction of mechanization process for the molding of clay bricks is suggested. This proves largely beneficial especially in the case of mixing internal fuel with clay as the manual mixing of internal fuel is hazardous for the health of the workers who are involved in the process.
6. Use of fly as (minimum 25%) in clay brick should be made mandatory to save soil and fuel.

(D) LONG TERM MEASURES (After 10 years)

After 10 years, based on need to shift/upgrade on to the new technology like tunnel kin, Hoffman kiln or any other new technology based on cheaper fuel like solar power or natural gas (PNG/CNG), long term measures can be implemented to reduce emission of particulate matter to negligible level. Although there are many environmental advantages of shifting to new technology like gas based kiln/tunnel kiln, but the implementation of these measures depends on the availability of infrastructure and willing of brick kilns for huge investment for change of technology which is not possible in today’s scenario. After 10 years, there may be possibility of availability of cheaper fuel and infrastructures required for adopting gas based technology. The major constraints in use of natural gas in existing zig-zag kiln are as under:

1. All the kilns will have to modify either to Hoffman Kiln or a Tunnel kiln. Both these technologies are comparatively less efficient than the existing kilns.
2. **Viability of PNG:**

- The combustible mixture of natural gas and air does not ignite if the mixture is leaner than 5% and richer than 15% of the fuel-air ratio required for ignition. This narrow inflammability range makes

PNG one of the safest fuel. *(Source: GAIL India, Ltd).* However, bricks kilns require it in very large volume. Expert man power is required to handle it and work has to be carried out according to strict schedules and parameters. To keep such high level of disciple, looks very difficult in bricks kilns.

- The pricing of PNG is another issue. To make a comparison, the coal, having GCV of about 6000 Kcal/kg, is available at a price of about 11000 per MT whereas, currently the PNG (GCV 11500kcal/kg) cost at Agra for industrial use is Rs. 45/SCM (rate effective from 7.4.2021), it will mean an increased cost of burning. Brick kiln operator need to make modifications in plant & arrange for internal pipeline from downstream of meter till the gas consumption points which requires addition expenditure. This shall increase the cost of manufacturing.
- The technology to use PNG in brick kilns is not available indigenously and has to be imported. Even the equipment with the required safety devices has to be imported.

(E) MEASURES TO CONTROL FUGITIVE DUST EMISSION

Fugitive dust is generated from various processes during brick manufacturing and having bigger particle size which cannot travel beyond a distance of more than 100 meters. The major fugitive dust emission takes place from following steps during brick manufacturing:

i. Clay Excavation, Transportation, and Stacking at the Kiln site
ii. Preparation of Clay by adding internal fuel and water
iii. Manual Moulding of Green bricks
iv. Loading in the Brick Kiln
v. Covering Bricks with Ash in Kiln Rooftop
vi. Fuel Handling (Coal/Agriculture Waste)
vii. Firing of Bricks in High Draught Kiln
viii. Removal of Ash from Kiln Rooftop
ix. Unloading of Fired Bricks

x. Stacking and Delivery of bricks

Following measures are recommended to control the fugitive dust emission from a brick kiln:

1. Coal should preferably be stored under shed with proper ventilation on a pucca platform. Crushing of coal should be done in enclosed equipment/ area to avoid process emissions. The coal size should be between powders to ¾ inch i.e. properly graded coal. This would help in uniform brick quality as the powdered coal ignites immediately on feeding thereby releasing heat to the top layer of brick setting.
2. To control dust emissions due to airborne ash from the top of brick settings, the top ash layer in the preheating zone should be kept covered with sheet.
3. The clay should be prepared at a Centralized location with the use of Backhoe-Loader(JCB) and Mechanized Clay mixing machine which can help in the reduction of dust emissions at clay mixing places.
4. An iron shed should be installed over the kiln which will reduce the fugitive emission from the kiln and also reduce the coal consumption. This will further helpful in reducing the pollution due to burning of coal and protection of the kiln during rains. Provision of shed over kiln would save at least 20-30 tons of coal every first cycle. Providing shed over the kiln would also improve the ambience of the area and provide shed to the workers working in the kiln.
5. Pavement of approach road within the premises of brick kilns. Water should be sprinkled frequently over roads around brick kiln and over the ash layer before its removal and transfer.
6. A wall of at least 3.0 meters height to be constructed on the sides where land is not available for green belt development to prevent fugitive emissions. Multi-layer green belt to be developed along the periphery of brick kiln.

5.2 Specific Recommendations

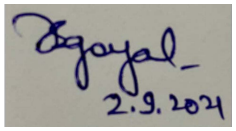
Estimation of the pollution load, assimilative & supportive capacity for the Rajakhera block has been carried out. Though, actual stack emission from the brick kilns and meteorological data of the Rajakhera block are not available, yet assessment has been carried out utilizing monitoring data for the brick kilns of Aligarh region which is close to Rajakhera block. Following are the key conclusions/recommendations for sustenance of the brick kiln within the supportive capacity:

i. RSPCB, Regional Office, Bharatpur shall ensure that none of the 57 brick kilns operates without Consent to Operate (CTO).
ii. RSPCB, Regional Office, Bharatpur may take decision on the month-wise restriction on the operation of the brick kilns situated on the upwind direction i.e. North, North-West considering the distance from the Rajakhera village. The impact of individual brick kiln on ambient air quality at the receptor points within the Rajakhera block reduces as the distance from the receptor point increases. Therefore, any kilns near the periphery of the block may be allowed to operate if these can be relocated at a farther distance.
iii. Regulatory authority viz. RSPCB shall ensure the implementation of the immediate & short term measures of reducing the pollution on priority.
iv. To control the fugitive emission, brick kiln operators may be directed to implement the above recommendation to control the fugitive dust emission.
v. Biomass is available in plenty in Northern India including Rajasthan and should be given preference for controlled combustion with pollution control system, otherwise burning of biomass in open field will have more adverse impact on air quality,

as observed in Delhi NCR during Post monsoon & winter months for last few years.

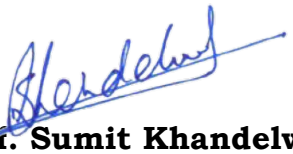
vi. Further, a study on Source Contribution Assessment within 11 km from the Centre of Rajakhera is recommended to assess the actual contribution of brick kilns and other local sources of air pollution in the Rajakhera village. The study should cover sources of air pollution (including the Rajakhera Village itself), air quality monitoring in Rajakhera Village, meteorological data collection, dispersion & receptor modeling with health impact assessment. This will not only help in delineating action plans for the air quality management in the Rajakhera village but will also help in assessing the actual assimilative, supportive and carrying capacity of the Rajakhera village in terms of brick kilns to be permitted in future. Such study should be conducted by Brick Manufacturers Association of Rajakhera Block, under the guidance of the present Expert Committee.

This report is being filed by the Expert Committee through CPCB, for the consideration of Hon'ble National Green Tribunal.



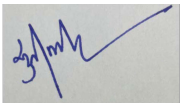
(Dr. S K Goyal)
CSIR-NEERI
Delhi

(Dr. Neeraj Jain)
CSIR-CBRI
Roorkee



(Prof. Sumit Khandelwal)
MNIT Jaipur
Jaipur

(Sharad Saxena)
Regional Officer
RSPCB, Alwar



(Sunil Kumar Meena)
Scientist-D
CPCB, RD, Bhopal

ANNEXURE-I

क्षेत्रीय निदेशालय (मध्य), भोपाल
Regional Directorate (Central), Bhopal
केन्द्रीय प्रदूषण नियंत्रण बोर्ड
Central Pollution Control Board
(पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार)
(Ministry of Environment, Forests & Climate Change, Government of India)

RD/BPL/OA31_2021(CZ)/2021-22/ 15

Date: 24th June 2021

OFFICE ORDER

Subject: Constitution of 05 member Expert Committee in compliance of Hon'ble NGT order dated 3.6.2021 in O.A. No. 31 of 2021 (CZ); Vijay Singh Vs State of Rajasthan & Ors; to suggest ways and means, if any, by which sustenance of brick kilns activities may be viable-reg.

The Hon'ble NGT (CZ) vide its order dated 3.6.2021, in the matter of O.A. No. 31 of 2021; Vijay Singh Vs State of Rajasthan & Ors, directed as follow:

"Accordingly, we direct CPCB to constitute a Committee of five experts to suggest ways and means, if any, by which sustenance of brick kilns activities may be viable. It will be open to CPCB to nominate in-house or other Experts. The CPCB may also explore viability of PNG as replacement of coal and other best practices in terms of fuel used, at other places. It will be open to the brick kilns owners/associations to give any other suggestions or alternatives for consideration, by CPCB in spirit of collaboration with a view to find a solution within a reasonable time. The CPCB may constitute an expert committee with the consultation of Member Secretary, State Pollution Control Board within three weeks which may give its report within six weeks thereafter. Further report may be furnished in the matter for the year 2019 & 2020 on the following points :

i. Estimation of Existing Pollution Load w.r.t PM2.5
ii. Estimation of Assimilative Carrying Capacity w.r.t PM10
iii. Estimation of Supportive Carrying Capacity w.r.t PM10"
The committee may also submit the suggestions so that the freedom of trade, business and right to life, with regard to fresh air and unpolluted water should be balanced.

In order to comply the above directions, an expert committee, comprising of the following members is hereby constituted in consultation with Member Secretary, RSPCB, Rajasthan:

1. Dr S K Goyal, Sr.Principal Scientist & Head , Delhi Zonal Lab, NEERI, Nagpur
2. Dr Neeraj Jain, Principal Scientist, CBRI, Roorkee
3. Prof Sumit Khandelwal, Dept. of Civil Engineering, MNIT, Jaipur Rajasthan
4. Sh O P Gupta, Regional Officer, RSPCB, Alwar, Rajasthan
5. Sh Sunil Kumar Meena. Scientist 'D', CPCB, RD, Bhopal (Member Convener)

Terms of Reference (TOR) of the Expert Committee:

1. The Committee shall look into the issues raised and finalise the report within the stipulated time frame.
2. The Expert Committee shall meet as and when required. Member Convener will coordinate with the members of the Joint Committee for conducting meetings and field visits.

3. The payment for TA/DA and sitting fee shall be made/reimbursed against the receipt of claim in accordance with the Hon'ble NGT order dated 20.4.2017 in O.A. No. 24 of 2011. The expenditure in this regard will be met from the Budget head "NGT 25%" at CPCB.
4. The Committee shall invite any other member as a "Special Invitee" as and when required with prior approval of MS, CPCB.

This issues with approval of Competent Authority.

(P Jagan)
Regional Director

To
1. Committee members : *for the compliance of the Hon'ble NGT order, please.*

Copy to:

2. MS, CPCB, Delhi
3. MS, RSPCB, Rajasthan
4. AD & DH, IPC-V, CPCB, Delhi
5. DH-Law, CPCB, Delhi
6. DH, F&A, CPCB, RD, Bhopal

} *for kind information, please.*

Regional Director

ANNEXURE-II

राजस्थान राज्य प्रदूषण नियंत्रण मण्डल
RAJASTHAN STATE POLLUTION CONTROL BOARD
4, Institutional Area, Jhalana Doongri, Jaipur.
Phone: 5101871, 5101872, EAPBX: 5159600, 5159699

URGENT

No. F.10 (365) RPCB/Legal/NGT-Bhopal/2021/1206-1208

Date: 30.07.2021

Regional Director,
Regional Directorate (Central),
Central Pollution Control Board,
Madhya Pradesh, Bhopal.

Sub: - Amendment in the CPCB office order dated 24.06.2021 with respect to constitution of the committee in compliance of Hon'ble NGT order dated 03.06.2021 in O.A. no. 31/2021 (CZ).

Ref:- 1. RSPCB letter no. F.10 (365) RPCB/Legal/NGT-Bhopal/2021/ 1066-68 dated 24.06.2021.
2. Office Order No. RD/BPL/OA31_2021(CZ)/2021-22/15 dated 24.06.2021.

Sir,

With reference to above subject matter and referred letter, it is to inform that the State Board had nominated Regional Officer, RSPCB, Alwar as member of the committee. It is to inform that Shri O. P. Gupta the then Regional officer, RSPCB, Alwar has now been transferred as Regional Officer, RSPCB, Chittorgarh.

Therefore, it is requested to make necessary amendments in the office order dated 24.06.2021 and Shri Sharad Saxena present Regional Officer, RSPCB, Alwar (Mobile No. 9829967299) may be made member of the committee in place of Shri O. P. Gupta.

Yours sincerely,

(Dr. Gobind Sagar Bhardwaj)
Member Secretary O/C

Copy to following for information:-
1. Regional Officer, RSPCB, Alwar.
2. Regional Officer, RSPCB, Chittorgarh.

Member Secretary O/C

ANNEXURE-III

Minutes of Meeting held Virtually on 30.6.2021 11:00AM in HOn'ble NGT O.A. No. 31 of 2021 (CZ); Vijay Singh Vs State of Rajasthan & Ors

A 05 member expert committee was constituted on 24.6.2021 by Central Pollution Control Board in compliance of the Hon'ble NGT order dated 3.6.2021 in O.A. 31 of 2021. The expert committee held its first virtual meeting on 30.6.2021. The meeting was attended by all the 05 members viz.

1. Dr S K Goyal, Chief Scientist & Head, Delhi Zonal Lab, NEERI, Delhi
2. Dr Neeraj Jain, Principal Scientist, CBRI, Roorkee
3. Prof Sumit Khandelwal, Dept of Civil Engg, MNIT, Jaipur, Rajasthan
4. Sh O P Gupta, Regional Officer, RSPCB, Alwar, Rajasthan
5. Sh Sunil Kumar Meena. Scientist 'D', CPCB, RD, Bhopal (Member Convener)

Sh Sunil Kumar Meena. Scientist 'D', Member convener has briefed the committee about the tribunal order and about earlier reports submitted by CPCB to Hon'ble Tribunal in similar kind of case related to brick kiln i.e. O.A. 1016 of 2019 Utkarsh Panwar Vs CPCB. The committee had detailed discussions on the following as per the order:

- Sustenance of brick kiln activities & viability.
- Viability of alternate fuel.
- Assessment of carrying capacity, pollution load & supportive capacity etc.

The committee was in the opinion to first collect few preliminary data related to brick kilns & ambient air monitoring in Rajakhera and Dholpur region along with earlier monitoring data of brick kilns before proceeding to field visit. The following was decided during meeting:

1. Collection & submission of the brick kiln related data for Rajakhera & Dholpur district viz. No. Of brick kilns, their technology (FCBTK/Zig-Zag etc.), Fuel types used and daily consumption, operational schedule, Production capacity, status & validity of CTE, CTO, GPS location, stack details, flue gas characteristics, PM concn. etc.

   (Action By: RSPCB by 10th July, 2021 for Rajakhera & 20th July, 2021 for Dholpur district)

2. Carry out & submit 24hourly AAQM at **06** representative locations of Rajakhera and nearby locations for PM10 & PM2.5 to collect the level of pollution. Also collect information related to environmental

condition (overcast, rain etc), brick kiln operational status, GPS location of monitoring stations etc,

(Action by: RSPCB by 10th July 2021)

3. Collection of AOD data of Rajakhera, Dholpur district.

(Action By: CPCB)

4. Collect source emission monitoring data of brick kilns available with CPCB for 2-3 brick kilns.

(Action By: CPCB)

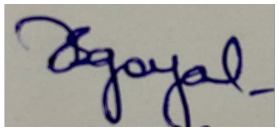
5. A meeting with brick kiln association of Dholpur district shall be arranged by RSPCB during the field visit of the committee. In the meantime, they will be asked to submit their concern and approach to ensure sustainability of the brick kiln in the region.

(Action by: RSPCB)

6. For understanding the viability of PNG as an alternate fuel, CPCB may arrange a meeting with PNG supplier during committee field visit. In the meantime, they can be approached for providing inputs in the context of the order.

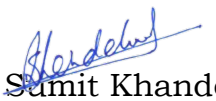
(Action By: CPCB)

The meeting ended with a note that on receipt of the required information further meeting & field visit may be planned accordingly.



(Dr S K Goyal)
Member

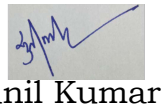
(Dr Neeraj Jain)
Member



(Prof Sumit Khandelwal)
Member

-Sd-

(O P Gupta)
Member



(Sunil Kumar Meena)
Member Convener

Minutes of Meeting held Virtually on 29.7.2021 11:30AM in Hon'ble NGT O.A. No. 31 of 2021 (CZ); Vijay Singh Vs State of Rajasthan & Ors

The 05 member expert committee held its 2nd virtual meeting on 29.7.2021 for having discussion on the available data, information submitted by CPCB & RSPCB and planning for the methodology for the assessment of pollution load, carrying capacity etc. The meeting was attended by all the 05 members viz.

1. Dr S K Goyal, Chief Scientist & Head, NEERI, Delhi
2. Dr Neeraj Jain, Principal Scientist, CBRI, Roorkee
3. Prof Sumit Khandelwal, Dept of Civil Engg, MNIT, Jaipur
4. Sh Sharad Saxena, Regional Officer, RSPCB, Alwar ***(On transfer of Sh O P Gupta, RO)***
5. Sh Sunil Kumar Meena. Scientist 'D', CPCB, RD, Bhopal (Member Convener)

Sh Sunil Kumar Meena. Scientist 'D', Member convener started the discussion on the 1st Virtual meeting's Minutes of Meeting wherein information & monitoring data were sought from CPCB & RSPCB for defining the methodology for the assessment. Detailed discussion on the Ambient Air Quality Monitoring, Aerosol Optical Density, Source emission monitoring of Brick kiln data and brick kiln establishment in the Rajakhera, Dholpur was held.

Further, it was opined by Dr S K Goyal, that based on the available information of the area, brick kilns, Ambient Air etc. A sensitivity analysis may be carried out considering combination of fuel type, meteorological condition etc.

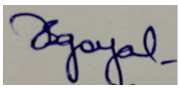
Following was planned accordingly:

1. The dispersion modelling based on the available data shall be carried out considering the receptor i.e. village Rajakhera.

(Action by: Dr S K Goyal, NEERI Delhi by 3rd August 2021)

For the discussion on modelling outcomes and further planning of field visits; the committee will have its 3rd Virtual meet on 4th August 2021 at 11:30AM.

The meeting ended with thanks to the members.

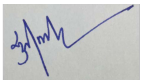


(Dr S K Goyal)
Member

(Dr Neeraj Jain)
Member

(Prof Sumit Khandelwal)
Member

(Sharad Saxena)
Member



(Sunil Kumar Meena)
Member Convener

Minutes of Meeting held Virtually on 04.8.2021 11:30AM in Hon'ble NGT O.A. No. 31 of 2021 (CZ); Vijay Singh Vs State of Rajasthan & Ors

The 05 member expert committee held its 3rd virtual meeting on 04.8.2021 for having discussion on the outcomes of the sensitivity analysis carried out for the brick kilns operational around the Rajakhera area. The meeting was attended by all the 05 members viz.

1. Dr S K Goyal, Chief Scientist & Head, NEERI, Delhi
2. Dr Neeraj Jain, Principal Scientist, CBRI, Roorkee
3. Prof Sumit Khandelwal, Dept of Civil Engg, MNIT, Jaipur
4. Sh Sharad Saxena, Regional Officer, RSPCB, Alwar (Ms Sonali, EE, RSPCB joined on behalf of Regional Officer, Alwar)
5. Sh Sunil Kumar Meena. Scientist 'D', CPCB, RD, Bhopal (Member Convener)

Dr S K Goyal, Chief Scientist, NEERI, Delhi explained the outcome of the sensitivity analysis carried out considering the worst condition viz. Wind direction as North & North-West. The impact of the operation of brick kilns on the ambient air quality and the average distance where minimal ground level concentration observed was discussed. As the calculation was based on the average top diameter of the chimney I.e. 0.9m; it was decided by the committee to consider the diameter and velocity of the flue gases where is was monitored. Dr Goyal was requested to re-calculate the same by considering modified data set of velocity, diameter, temperature etc and consider variable wind directions for the sensitivity analysis.

The committee was in the opinion that assessment of the carrying capacity of the area merely based on the 24 hourly ambient Air Quality Standard for PM_{10} i.e. 100µg/m^3 will not provide the clear picture on the environmental carrying capacity where background concentration of the PM_{10} is already high. Rather contribution in the Ambient Air Quality on operation of the brick kilns needs to be taken in consideration.

Following was planned accordingly:

1. The re-calculation of the sensitivity analysis considering the revised data set.
   (Action by: Dr S K Goyal, NEERI Delhi by 10th August 2021)

For the discussion of the outcomes and further planning; the committee will have its 4rd Virtual meet on 10th August 2021 at 2:00PM.

The meeting ended with thanks to the members.

(Dr S K Goyal)
Member

(Dr Neeraj Jain)
Member

(Prof Sumit Khandelwal)
Member

(Sharad Saxena)
Member

(Sunil Kumar Meena)
Member Convener

Minutes of Meeting held Virtually on 10.8.2021 2:00PM in Hon'ble NGT O.A. No. 31 of 2021 (CZ); Vijay Singh Vs State of Rajasthan & Ors

The 05 member expert committee held its 4th virtual meeting on 10.8.2021 for having discussion on the outcomes of the revised sensitivity analysis carried out for the brick kilns operational around the Rajakhera area. The meeting was attended by all the 05 members viz.

1. Dr S K Goyal, Chief Scientist & Head, NEERI, Delhi
2. Dr Neeraj Jain, Principal Scientist, CBRI, Roorkee
3. Prof Sumit Khandelwal, Dept of Civil Engg, MNIT, Jaipur
4. Sh Sharad Saxena, Regional Officer, RSPCB, Alwar (Sh Rajkumar Meena, AEE, RSPCB joined on behalf of Regional Officer, Alwar)
5. Sh Sunil Kumar Meena. Scientist 'D', CPCB, RD, Bhopal (Member Convener)

Dr S K Goyal, Chief Scientist, NEERI, Delhi explained the outcome of the sensitivity analysis carried out considering the variable wind directions with revised data set viz. Flue gas velocity & diameter of the chimney at the monitoring portholes. The outcome suggest that on a particular wind direction, all the brick kilns (103) are not contributing to the ambient air towards Rajakhera only few fall in that direction contributes. Secondly, the 24hr contribution by the brick kilns w.r.to the wind direction was also discussed. Contribution of single brick kiln operation showed very less contribution towards Rajakhera.

The committee discussed in detail the structure of the chimney and its exit velocity in light of natural draft. It was informed by RSPCB official that as per the discussion with Chimney designer the 12ft diameter is provided at base and this diameter decrease by 4.5 inches at every 5feet and the top diameter is maintained about 35 inches. Secondly, the life of a chimney is considered as 25 years whereas the settling chamber is replaced after about every 10years.

Dr Khandelwal raised an query on the use of variable wind speed in sensitivity analysis. He also submitted that he will try to arrange Meteorological data of the Dholpur and accordingly the analysis based on variable wind speed may also be carried out.

In light of the variable diameter of the chimney in its length and the exit velocity is not available; committee opined to consider the available monitoring porthole data for further analysis.

Dr Goyal explained the concept of environmental carrying capacity and its assimilation capacity in detail. He suggested that to make sustainable development, the supportive capacity needs to be based on the interventions that may results in accommodation of the new industrial activities viz. converting FCBTK in Zigzag or changing fuel from coal to gas etc.

Dr Goyal inform that the result of the total pollution load, assimilation capacity & supportive capacity may be discussed in next meeting on 18th August 2021. Sh Meena informed that the reports needs to be submitted before 31st August 2021 to brought this in the NGT's next date of hearing.

Following was planned accordingly:

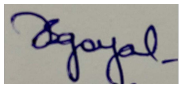
1. The draft report on pollution load, assimilation & supportive capacity.
   (Action by: Dr S K Goyal, NEERI Delhi by 17th August 2021)

2. The collection and submission of the meteorological data of Dholpur.

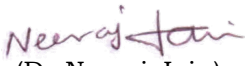
(Action by: Dr Khandelwal, MNIT by 15th August 2021)

For the discussion of the outcomes and further planning; the committee will have its 5th virtual meet on 18th August 2021 at 11:30AM.

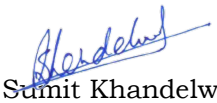
The meeting ended with thanks to the members.



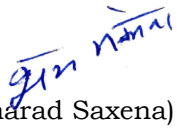
(Dr S K Goyal)
Member



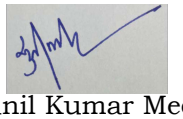
(Dr Neeraj Jain)
Member



(Prof Sumit Khandelwal)
Member



(Sharad Saxena)
Member



(Sunil Kumar Meena)
Member Convener

Minutes of Meeting held Virtually on 19.8.2021 5:00PM in Hon'ble NGT O.A. No. 31 of 2021 (CZ); Vijay Singh Vs State of Rajasthan & Ors

The 05 member expert committee held its 5th virtual meeting on 19.8.2021 for having discussion the theoretical & practical volumetric flow rate of the flue gas. The meeting was attended by all the 05 members viz.

1. Dr S K Goyal, Chief Scientist & Head, NEERI, Delhi
2. Dr Neeraj Jain, Principal Scientist, CBRI, Roorkee
3. Prof Sumit Khandelwal, Dept of Civil Engg, MNIT, Jaipur
4. Sh Sharad Saxena, Regional Officer, RSPCB, Alwar (Sh Rajkumar Meena, AEE, RSPCB joined on behalf of Regional Officer, Alwar)
5. Sh Sunil Kumar Meena. Scientist 'D', CPCB, RD, Bhopal (Member Convener)

Dr S K Goyal, Chief Scientist, NEERI, Delhi started the discussion on the theoretical calculation of quantity of flue gas for 17% O2 concentration in flue gas. On assuming a high-draft zig-zag kiln producing 30000 brick/day (weight of fired brick 3 kg/brick) using Raniganj coal (GCV 6000Kcal/kg or 25.08MJ/kg). Based on the ultimate analysis of coal, the stoichiometric air requirement comes as 8.051 kg of air/kg of coal. Considering the Specific Energy Consumption (SEC) 0.91-1.3MJ/kg; the daily coal consumption comes as 3265 - 4665 kg/day. And the stoichiometric air calculated for SEC 0.91MJ/kg & 1.3MJ/kg is 26290.9 kg air/day and 37558.5kg air/day respectively. The excess air at 17% O2 (considering proposed norms of 250mg/NM3) calculated is 436%. Considering the excess air, the theoritical quantity of air flow at 17% O2 in flue gas comes as 140920kg of air/day and 201314 kg of air/day for SEC 0.91MJ/kg and 1.3MJ/kg respectively.

Whereas, on considering following field data of the 08 FCBTK (coal+husk) based operational brick kiln at Aligarh, UP. The volumetric flow of flue gas calculated is 18,31,248 m3/day.

Field data:

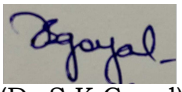
S.No.	Particulars	Values
1.	Average Ambient Temperature	37.6 degree C
2.	Average Stack Temperature	77.2 degree C
3.	Average height of the monitoring porthole from Ground	3.22m
4.	Average internal diameter of the stack at monitoring point	2.96m (say 3m)
5.	Average Velocity at monitoring point	2.82 m/s (Say 3m)
6.	Moisture %	0.585
7.	Average Static pressure	730mm Hg
8.	O_2 %	18.4%
9.	Average PM concentration	273 mg/NM3
10.	Average PM @ 17%O2	420 mg/NM3
11.	Volumetric flow M^3/s	21.195
12.	Daily volumetric flow m3/day	18,31,248 m3/day
13.	Normalize daily volumetric flow at 25C	1,677,818 Nm3/day
14.	Daily load in Kg/day/brick	704.6 kg/day (Say 704kg/day)

As the quantity of theoritical air to monitored quantity of air is varying too much, this may be due to the following:

- Theoritical air calculated considering High draft zig-zag kilns whereas monitored values are of FCBTK natural draft kilns.
- Theoritical air was calculated at 17% excess air; whereas monitored kilns were having average 18.4% O_2 in flue gas.
- The flue gas velocity monitored during the fuel charging period only; whereas between to charging, an average 30-45mins non-charging period also comes. This may result in variation in velocity.
- The stack diameter is not uniform throughout the length; At bottom diameter is about 4m whereas at top it reduce upto 1m. In such non-uniform natural draft stack, monitoring height may also play an important role.

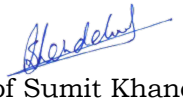
The committee opined that as CPCB has recently carried out source emission monitoring of brick kilns of Aligarh with available methodology; the monitoring results may be considered for the assessment of the pollution load, carrying capacity and supportive capacity. However, above points may be considered in further monitoring.

The meeting ended with thanks to the members.

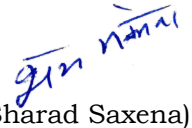


(Dr S K Goyal)
Member

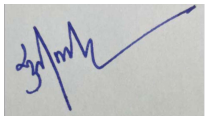
(Dr Neeraj Jain)
Member



(Prof Sumit Khandelwal)
Member



(Sharad Saxena)
Member



(Sunil Kumar Meena)
Member Convener

ANNEXURE-IV

8047/2021/TECH-RD (Bhopal)

S.No.	Name of Industry	Industrial Area & Address	Tehsil	GPS Location	Operational Status (Operational/ Non-Operational/ Proposed/ Closed)	During inspection Status of brick kiln (Operational/Closed	Technology (FCBTK/Zig-Zag)	Fuel Type (Coal/Husk/other)	Fuel Quantity (Kg/Day)	Consent Validity	Consent Status (Valid /Expired /Without Consent /Revoke/ Refused /Pending/ Direction Issued)	Remarks(Monitoring facility)
1	555 Brick Filed	Village:- Khanpura	Rajakhera	Latitude- 26.871482 Longitude -78.124729	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not provided
2	Baba Bricks Field	Village- Dighi	Rajakhera	Latitude- 26.885884 Longitude-78.148464	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Adequate
3	H.C. Brick Field	Village- Gangoli ka pura	Rajakhera	Latitude - 26.88914 Longitude -78.138487	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	30/11/2014	Expired	Not Provided
4	Ashu Bricks Fields	Village- Singhwali	Rajakhera	Latitude- 26.925492 Longitude-78.151359	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	100000	-	Without Consent	Adequate
5	Dada Bricks Field	Village- Nagar	Rajakhera	Latitude- 26.891765 Longitude -78.074009	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	7000	-	Without Consent	Not Adequate
6	H. M. Brick Field	Village- Vidar (Kachiyara Vidar)	Rajakhera	Latitude- 26.920338 Longitude-78.112591	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	30.04.2029	Valid	Adequate
7	Baba Brick Field	Village- Ghanedi	Rajakhera	Latitude- 26.885163 Longitude -78.062466	Closed	Closed	FCBTK	NA	Not Known	-	Without Consent	Not Adequate
8	B D Brick Field	Village- Nagar	Rajakhera	Latitude- 26.927124 Longitude -78.155584	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	6000	-	Without Consent	Not Adequate
9	Dada Brick Field	Village- Silwat Road	Rajakhera	Latitude- 26.901384 Longitude -78.185796	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Coal	3000	28.02.2030	Valid	Adequate
10	Tapendra Brick Field	Village- Nagar	Rajakhera	Latitude- 26.902519 Longitude -78.069925	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	Not Known	-	Without Consent	Not Adequate
11	Rinku Bricks Field	Village- Kachiyara Bidar	Rajakhera	Latitude- 26.917125 Longitude -78.119908	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	5000	31.01.2021	Expired	Adequate
12	Shivam Bricks Field	Village- Drawali	Rajakhera	Latitude- 26.928901 Longitude -78.182128	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	31/03/2030	Valid	Adequate
13	B S Brick Field	Viilage- Nagar	Rajakhera	Latitude- 26.908524 Longitude -78.067851	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	Not Known	-	Without Consent	Not Adequate
14	Girraj Brick Field	Village- Nagar	Rajakhera	Latitude- 26.899008 Longitude -78.077509	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	Not Known	-	Without Consent	Not Adequate
15	H D Bricks Field	Viilage- Nagar Road Khanpura	Rajakhera	Latitude- 26.882402 Longitude -78.117425	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	8000	-	Without Consent	Not Provided
16	R A Bricks Field	Viilage- Nagar Road Khanpura	Rajakhera	Latitude- 26.881586 Longitude -78.116573	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Provided
17	Gajanand Brick Field	Viilage- Dighi	Rajakhera	Latitude- 26.885576 Longitude-78.146689	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Adequate
18	Banshi Bricks Field	Village- Somali	Rajakhera	Latitude- 26.887459 Longitude -78.142959	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
19	A.S Bricks Field	Village- Sanghwali	Rajakhera	Latitude- 26.924409 Longitude -78.169565	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	7000	30.11.2030	Valid	Adequate
20	V C Brick Field	Village- Gangoliya ka Pura	Rajakhera	Latitude- 26.892918 Longitude -78.15599	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
21	Vaishno Devi Brick Field	Village- Amberpur	Rajakhera	Latitude- 26.909928 Longitude -78.150602	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	7000	-	Without Consent	Not Adequate
22	Gurukripa (Sant) Bricks Field	Village- Amberpur	Rajakhera	Latitude- 26.912432 Longitude -78.144938	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
23	R.P Bricks Field -1	Village- Silwat Road, Nadora	Rajakhera	Latitude- 26.897565 Longitude -78.2056	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	4000	Refused	Expired	Not Provided
24	H.M Bricks Field	Village- Gopalpura	Rajakhera	Latitude- 26.920076 Longitude -78.141622	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	31/07/2030	Valid	Adequate
25	D R Bricks Field	Village- Dongarpur	Rajakhera	Latitude- 26.914256 Longitude -78.139601	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	6000	-	Without Consent	Not Adequate
26	Shri Dauji Bricks Field	Village- Dongarpur	Rajakhera	Latitude- 26.917837 Longitude -78.136397	Operational	Closed	FCBTK	Coal	Not Known	31/12/2020	Expired	Not Provided

27	Pramod Bricks Field	Viilage- Singhawali	Rajakhera	Latitude- 26.917921 Longitude -78.169329	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	29/02/2020	Pending	Adequate
28	Shankar Bricks Field	Village- Gopalpura	Rajakhera	Latitude- 26.921006 Longitude -78.138951	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
29	J S Bricks Field	Village- Dongarpur	Rajakhera	Latitude- 26.921226 Longitude -78.138935	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Coal	Not Known	-	Without Consent	Not Adequate
30	Rehna Bricks Field	Village- Jerihan-1	Rajakhera	Latitude- 26.892918 Longitude -78.15599	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	30.11.2019	Expired	Not Provided
31	M D Bricks Field	Village- Kariliki	Rajakhera	Latitude - 26.919311 Longitude -78.142369	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Adequate
32	Ganga Bricks Field	Village-Cheetarpura	Rajakhera	Latitude- 26.938784 Longitude -78.139309	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Provided
33	S L Bricks Field	Village-Cheetarpura	Rajakhera	Latitude- 26.939923 Longitude -78.137746	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Provided
34	Shiv Bricks Field	Village-Cheetarpura	Rajakhera	Latitude- 26.934187 Longitude -78.135743	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Provided
35	GangaBricks Field	Village- Sikaroda Mod, Cheetarpura	Rajakhera	Latitude- 26.933962 Longitude -78.143207	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Provided
36	Rama Bricks Field	Village- Sikaroda Mod, Cheetarpura	Rajakhera	Latitude - 26.93064 Longitude -78.137878	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Provided
37	Genda Baba (GB) Bricks Field-1	Village- Sikroda	Rajakhera	Latitude- 26.933681 Longitude -78.131368	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Provided
38	H.S Bricks Field	Village- Dongarpur	Rajakhera	Latitude- 26.913981 Longitude -78.140388	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	8000	30.11.2020	Expired	Adequate
39	Genda Baba (GB) Bricks Field-2	Village- Sikroda	Rajakhera	Latitude- 26.932557 Longitude -78.133384	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Provided
40	P F Bricks Field	Village- Kachariya Badar	Rajakhera	Latitude- 26.919242 Longitude -78.120169	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Provided
41	S B F (Aman) Bricks Field	Village- Kachariya Badar	Rajakhera	Latitude- 26.919227 Longitude -78.118518	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Adequate
42	Jai Bajrang Brick Field	Village- Pinahat Road	Rajakhera	Latitude- 26.890124 Longitude -78.182878	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	Refused	Without Consent	Not Adequate
43	Jai Kela Ent Udyog	Village- Singhwali	Rajakhera	Latitude- 26.930634 Longitude -78.171366	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	4000	31/03/2016	Expired	Not Adequate
44	H M Brick Field	Village- Kachiyara Bidar	Rajakhera	Latitude- 26.920338 Longitude -78.112591	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
45	T P Brick Field	Village- Bidar	Rajakhera	Latitude- 26.919419 Longitude -78.108277	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	3000	-	Without Consent	Not Adequate
46	Munna Bricks Field	Village- Singhwali	Rajakhera	Latitude- 26.929443 Longitude -78.142423	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	31/01/2018	Expired	Not Provided
47	A B F Brick Field	Village- Bidar	Rajakhera	Latitude- 26.925676 Longitude -78.107505	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Provided
48	Ganesh Bricks Field	Viilage- Karilki	Rajakhera	Latitude - 26.91254 Longitude -78.143233	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	5000	31.03.2030	Valid	Adequate
49	Bhagwati Brick Field (Yatendra Kumar & Sons Bricks Field)	Viilage- Amberpur	Rajakhera	Latitude- 26.913275 Longitude -78.140623	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	6000	30.11.2027	Valid	Not Adequate
50	Bhateshwar Nath Bricks Udyog	Village- Singhwali Khurd	Rajakhera	Latitude- 26.920255 Longitude -78.159398	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	5000+500	28.02.2029	Valid	Adequate
51	Radha Vihari Bricks Field	Village- Shri Nagar Mod	Rajakhera	Latitude- 26.936166 Longitude -78.14436	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	2500	28.02.2029	Valid	Not Adequate
52	Shri Bhagwan Brick Field (Old Shree Tripura Bricks Field)	Village- Somali	Rajakhera	Latitude- 26.888526 Longitude -78.134406	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	Not Known	31.03.2029	Valid	Not Adequate
53	Shree Krishna Bricks Field	Village- Somli	Rajakhera	Latitude- 26.880733 Longitude -78.13772	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	7000+3000	30.11.2030	Valid	Adequate
54	Bajrang Bricks Field	Village- Ambarpur Road	Rajakhera	Latitude- 26.909254 Longitude -78.151462	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	10000	31.12.2027	Valid	Adequate
55	Lambardaar Bricks Field	Village- Devkhera	Rajakhera	Latitude- 26.887838 Longitude -78.197319	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	4000	-	Without Consent	Adequate

8047/2021/TECH-RD (Bhopal)

56	Gurukripa Bricks	Village- Somali	Rajakhera	Latitude- 26.888266 Longitude -78.127797	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	28/02/2018	Expired	Not Provided
57	Hari Singh Bricks Field	Village- Devkhera	Rajakhera	Latitude- 26.894807 Longitude -78.184495	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
58	H.S Bricks Field	Village- Devkhera	Rajakhera	Latitude- 26.894807 Longitude -78.184495	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
59	R P Bricks Field	Village- Silawat Road, Nadora	Rajakhera	Latitude- 26.897565 Longitude -78.2056	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	6000	-	Without Consent	Adequate
60	Ajit Bricks Field	Village- Singhwali	Rajakhera	Latitude- 26.927157 Longitude -78.147847	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	Not Known	31/05/2030	Valid	Adequate
61	Kaila Devi Brick Field	Village-Dulherai ka gher	Rajakhera	Latitude- 26.90641 Longitude -78.189395	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
62	B.I.P Bricks Field	Village- Singhwali Khurd	Rajakhera	Latitude- 26.925523 Longitude -78.140761	Operational	Non-Operational (Due to Monsoon Season)	Zig-Zag	Coal	Not Known	31.05.2030	Valid	Not Adequate
63	B.K Bricks Field	Village- Sikroda Road	Rajakhera	Latitude- 26.92798 Longitude -78.139751	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Coal	Not Known	31.05.2030	Valid	Adequate
64	Shri Bihariji Ent Udyog	Village- Singhwali	Rajakhera	Latitude- 26.930756 Longitude -78.14551	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	5000	30/04/2021	Pending	Adequate
65	Shri Banke Bihari Bricks Field	Village- Ghana ka Pura	Rajakhera	Latitude- 26.905817 Longitude -78.18326	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	4000	-	Without Consent	Not Adequate
66	Bachheki Brick Field	Village- Singhwali Kalan	Rajakhera	Latitude- 26.922339 Longitude -78.161806	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	Not Known	31/12/2019	Expired	Adequate
67	Maa Durge Brick Field	Village- Didwar Road	Rajakhera	Latitude- 26.911136 Longitude -78.180027	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Coal	Not Known	10/03/1902	Without Consent	Not Adequate
68	Shri Ram Brick Field	Village- Singhwali	Rajakhera	Latitude- 26.922082 Longitude -78.163227	Closed	Closed	FCBTK	NA	Not Known	31.05.2019	Expired	Not provided
69	D N Brick Field	Village- Didwar Road	Rajakhera	Latitude- 26.914781 Longitude -78.182243	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
70	K.B Brick Field	Village- Vidar (Sikroda)	Rajakhera	Latitude- 26.920128 Longitude -78.11527	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	5000	31/01/2017	Expired	Adequate
71	Shanti Swaroop (Owner) Brick Filed	Village- Didawar Road	Rajakhera	Latitude- 26.912355 Longitude -78.18995	Under Contruction	Under Contruction	FCBTK	NA	Not Known	-	Without Consent	Not Provided
72	M/s Gayatri Bricks Field (Old Shubham Ent Udyog)	Village- Vilhata Road, Rajakhera	Rajakhera	Latitude- 26.908678 Longitude -78.186022	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	5000	28.02.2030	Valid	Adequate
73	Kali Maa Brick Field	Village-Dirawali kHurd Road	Rajakhera	Latitude- 26.928245 Longitude -78.181752	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
74	Jai Hanuman Brick Field	Village-Dirawali	Rajakhera	Latitude- 26.934604 Longitude -78.186394	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
75	R K-1 Bricks Field	Village- Singhawali Kalan	Rajakhera	Latitude- 26.921143 Longitude -78.170871	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Adequate
76	Baba Brick Field	Village- Silawat Road	Rajakhera	Latitude- 26.898666 Longitude -78.209138	Closed	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
77	R K- 2 Brick Field	Village- Singhawali Kalan	Rajakhera	Latitude- 26.92266 Longitude -78.169344	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
78	P.N.F Brick Field	Village- Ramgarha (Sikroda)	Rajakhera	Latitude- 26.919353 Longitude -78.105951	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	7000	31/10/2019	Expired	Not Adequate
79	Goverdhan Brick Field	Village- Singhawali Kalan	Rajakhera	Latitude- 26.92787 Longitude -78.169795	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
80	K D Brick Field	Village- Singhawali Kalan	Rajakhera	Latitude- 26.925383 Longitude -78.165719	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
81	Baba (Marca) Brick Field	Village-Singhawali	Rajakhera	Latitude- 26.92298 Longitude -78.15669	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
82	Shri Mahadev Brick Field	Village- Somalipura	Rajakhera	Latitude- 26.879151 Longitude -78.140881	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	6000	30.11.2030	Valid	Adequate
83	Bankey Bihari Brick Field	Village- Singhawali Khurd	Rajakhera	Latitude- 26.921706 Longitude -78.156075	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate

84	Shahjij Brick Field	Village- Singhawali Khurd	Rajakhera	Latitude- 26.92479 Longitude -78.154327	Closed	Closed	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
85	A B F Brick Field	Village- Singhawali Khurd	Rajakhera	Latitude- 26.926898 Longitude -78.151337	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Adequate
86	D J (Marca) Brick Field	Village- Singhawali Khurd	Rajakhera	Latitude- 26.928319 Longitude -78.148852	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
87	Satyendra Brick Field	Village- Doongrapur Road, Amarpur	Rajakhera	Latitude - 26.91057 Longitude -78.148692	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Coal	5000	31.03.2030	Valid	Adequate
88	Ashish Bricks Field	Village- Singhawali	Rajakhera	Latitude- 26.931999 Longitude -78.142666	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	8000	31.05.2028	Valid	Adequate
89	H.C Brick Field	Village- Somali (Gangoliyapura Road)	Rajakhera	Latitude - 26.88914 Longitude -78.138487	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Adequate
90	R.M Brick Field	Village- Singhwali	Rajakhera	Latitude- 26.925783 Longitude -78.166693	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	8000	30.09.2018	Expired	Adequate
91	Jain Bricks Field	Village- Bidar	Rajakhera	Latitude- 26.923616 Longitude -78.103575	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	Not Known	31/12/2018	Expired	Adequate
92	Laxmi Bricks Field (Mehadvar)	Village- Rajakhera	Rajakhera	Latitude- 26.918868 Longitude -78.161145	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk+Coal	10000+2000	31/10/2027	Valid	Adequate
93	G.S Bricks Field	Village- Gopal Pura	Rajakhera	Latitude- 26.922355 Longitude -78.137875	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	4000	31/12/2014	Expired	Not Provided
94	Shri Bankey Bihariji Brick Field	Village-Somli	Rajakhera	Latitude- 26.889397 Longitude -78.141111	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	4000	-	Without Consent	Adequate
95	Jai Karauli Maa Bricks Field	Village- Amberpur	Rajakhera	Latitude- 26.907145 Longitude -78.147977	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	31.12.2030	Valid	Adequate
96	R.V.S (Sisodiya Ent Bhatta) Brick Field	Village- Singhwali (Agra Roaad)	Rajakhera	Latitude- 26.940882 Longitude -78.146204	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	-	Without Consent	Not Adequate
97	Appu Brick Field	Village- Vidar	Rajakhera	Latitude- 26.91909 Longitude -78.105888	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	6000	31.07.2026	Valid	Not Adequate
98	Shri ram Brick Field	Village- Somli	Rajakhera	Latitude- 26.87753 Longitude -78.14037	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	30.11.2030	Valid	Adequate
99	C.P Bricks Field	Village- Karilki	Rajakhera	Latitude- 26.919378 Longitude -78.148343	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	30.11.2020	Expired	Adequate
100	K.S Bricks Field	Village- Bidar	Rajakhera	Latitude- 26.92019 Longitude -78.110408	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	31.12.2026	Valid	Adequate
101	Aman Bricks Field	Village- Kachhiyara Bidar	Rajakhera	Latitude- 26.919227 Longitude -78.118518	Proposed	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	31-01-2022 CTE	Valid	Not Adequate
102	Sisodiya Brick Field	Village-Nadora	Rajakhera	Latitude- 26.897244 Longitude -78.221093	Operational	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	6000	31.10.2030	Valid	Adequate
103	Kanha Bricks Field	Village-Singhawali	Rajakhera	Latitude- 26.927124 Longitude -78.155702	Proposed	Non-Operational (Due to Monsoon Season)	FCBTK	Husk	Not Known	31.10.2025 CTE	Valid	Not Adequate

माननीय राष्ट्रीय हरित प्राधिकरण OA No. 31/2021 विजय सिंह पुत्र बनाम, स्टेट ऑफ राजस्थान के अन्तर्गत धौलपुर जिले में स्थित ईंट भट्टों द्वारा दिये गये सुझावों का विवरण

क्र.सं.	ईंट भट्टे का नाम एवं पता	ईंट भट्टे के मालिक/पार्टनर का नाम, पता व मोबाईल नं0	वायु प्रदूषण नियंत्रण उपकरण के बारे में सुझाव	ईंधन परिवर्तन कोयले/लूडी से पी.एन.जी. के सम्बन्ध में सुझाव	स्थिर चिमनी बुल ट्रेंच विलन से जिग–जैग में परिवर्तन हेतु सुझाव	कोई प्रक्रिया परिवर्तन के सम्बन्ध में सुझाव	अन्य सुझाव
1	बी0के0 ब्रिक्स फील्ड, सिकरोदा रोड राजाखेडा	विजय कुमार जैन राजखेडा (धौलपुर) 9352634952	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक में परिवर्तन के इच्छुक हैं। लेकिन कोरोना महामारी स्थिति आर्थिक खराब अभी संम्भव नहीं है।	खनिज विभाग व प्रदूषण विभाग की NOC कि बिना कोई भट्टा संचालित नही हैं।	सभी ईंट भट्टों को कोयला से चलाने की अनुमति प्रदान की जावें।
2	श्री बिहारी जी ईंट उद्योग, सिंघावली मोड, राजखेडा– भरतपुर	श्री हरिओम गुप्ता जी, राजखेडा (धौलपुर) 6375659206	120 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक में परिवर्तन के इच्छुक हैं। लेकिन कोरोना महामारी स्थिति आर्थिक खराब अभी संम्भव नहीं है।	खनिज विभाग व प्रदूषण विभाग की NOC कि बिना कोई भट्टा संचालित नही हैं।	–
3	बी.आई.पी. ब्रिक्स फील्ड, गोपालपुरा रोड, राजाखेडा (धौलपुर)	ग़ज़मन लाल जैन 9314746077	115 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	पूर्व में ही जिग–जैग तकनीकी के तहत् भट्टा चलाया जा रहा है।	खनिज विभाग व प्रदूषण विभाग की NOC कि बिना कोई भट्टा संचालित नही हैं।	प्रदूषण कम करने वास्ते सभी वैध भट्टों को कोयला से चलाने की अनुमति प्रदान की जावें।
4	सिसोदिया ब्रिक्स फील्ड, सिलावट रोड (नदोरा) भीमपुरा	वीरसिंह पुत्र श्री फूलसिंह, गांव–पोस्ट भाजना, तह0 राजाखेडा, जिला–धौलपुर 9636414174	122 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीकी में परिवर्तन के इच्छुक हैं। लेकिन कोरोना महामारी स्थिति आर्थिक खराब अभी संम्भव नहीं है।	खनिज विभाग व प्रदूषण विभाग की NOC कि बिना कोई भट्टा संचालित नही हैं।	–

5	श्री बटेश्वर नाथ विक्रम फील्ड, सिंघावली खुर्द, आगरा रोड	बीरेन्द्र सिंह पुत्र उत्तम सिंह 9772394716 दुन्दाराम पुत्र मंगलसिंह 8740996784 अतरसिंह पुत्र याप्रसाद 9772763299	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक में परिवर्तन के इच्छुक हैं। अभी कोरोना काल में ईंट भट्टा के उद्योग में काफी आर्थिक नुकसान हुआ है। इसलिए अभी कराना इच्छुक नहीं है।	सभी भट्टे खनिज विभाग व प्रदूषण नियत्रण विभाग के अनुमति के बाद ही चलें।	मजदूरों को नियंत्रित करने के लिए कानूनी प्रक्रिया को मजबूत बनाया जाये।
6	श्री महोदव ब्रिक्स फील्ड (सोमली) धौलपुर रोड नायला	प्रेमसिंह पुत्र रामस्वरूप प्रमोद पुत्र हुब्बलाल 9982982297	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक से चलाए गये भट्टें सफल नहीं हुए।	सभी भट्टे खनिज विभाग व प्रदूषण नियत्रण विभाग के अनुमति के बाद ही चलें।	मजदूरों को नियंत्रित करने के लिए कानूनी प्रक्रिया को मजबूत बनाया जाये।
7	जहारवीर गोगाजी ईंट उद्योग, दरियापुर, धौलपुर	रजनी सिंघल पुत्री विनोद कुमार सिंघल 9414307610	121 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग के इच्छुक हैं और जल्द ही जिग–जैग में तकनीक कर लिया जावेगा।	सभी यहां सरकारी नियमों के तहत।	यहां से अवासीय कॉलोनियों की दूरी का ध्यान रखा जायें और यहां से उचित दूरी होने पर ही उन्हे बसाया जायें।
8	गणेश ब्रिक्स फील्ड, सदर थाना के पीछे	महेश कुमार 9413310866	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक में परिवर्तन के इच्छुक हैं। लेकिन कोरोना महामारी स्थिति आर्थिक खराब अभी संम्भव नहीं है।	सभी इकाईया सभी सरकारी नियमों के द्वारा चलाई जानी चाहिए।	प्रदूषण एन.ओ. सी. जरूरी है।
9	पी.सी. बोहरा ईंट उद्योग	पी.सी. बोहरा 9414076638 हरि सिंह 9460605848 शौर्य सिंह 941331057	115 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक में परिवर्तन के इच्छुक हैं। लेकिन कोरोना महामारी स्थिति आर्थिक खराब अभी संम्भव नहीं है।	सभी इकाईया सभी सरकारी नियमों के द्वारा चलाई जानी चाहिए।	खनिज विभाग से अनुमति शुल्क काफी ज्यादा है इसे कम करावे।
10	राधाबिहारी ईंट उद्योग, श्रीनगर मोड, आगरा रोड, धौलपुर	मुकेश चन्द पुत्र लायक सिंह वार्ड नं0 1 भदौया राजाखेडा 9785619617	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक में परिवर्तन के इच्छुक हैं। लेकिन कोरोना महामारी स्थिति आर्थिक खराब अभी संम्भव नहीं है।	खनिज विभाग व प्रदूषण विभाग की एन.ओ.सी. दोनो जरूरी है।	ईंट भट्टे को चलाने के लिये कोयला व कूडी दोनो ही जरूरी हैं समय–समय पर जॉच होनी चाहिये।

11	गंगा भट्टा, गोपालपुरा मोड़, राजाखेड़ा, धौलपुर	रविन्द्र सिंह व विनोद कुमार 8475913100	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक में परिवर्तन के इच्छुक हैं। लेकिन कोरोना महामारी स्थिति आर्थिक खराब अभी संभव नहीं है।	खनिज विभाग व प्रदूषण विभाग की एन.ओ.सी. दोनो जरूरी है।	ईंट भट्टे को चलाने के लिये कोयला व कुंडी दोनो ही जरूरी हैं समय–समय पर जाँच होनी चाहिये।
12	वी.आर. ईंट उद्योग कुम्हेरी	पुरुषेन्द्र सिंह कुशवाह पुत्र श्री राम सिंह कुशवाह, 9828870403	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	12000 खिरल कुंडी लग जाती हैं। जो कि यहां आसानी से उपलब्ध है। PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक में परिवर्तन के इच्छुक हैं। लेकिन कोरोना महामारी स्थिति आर्थिक खराब अभी संभव नहीं है।	खनिज विभाग व प्रदूषण विभाग की एन.ओ.सी. दोनो जरूरी है।	माईन्स का खर्चा अधिक है जो भट्टा संचालकों के लिए परेशानी है।
13	लाल ईंट उद्योग, ग्राम–पोस्ट	बृजमोहन गोयल	115 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	कुंडी आसानी से उपलब्ध है। PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक में परिवर्तन के इच्छुक हैं। लेकिन कोरोना महामारी स्थिति आर्थिक खराब अभी संभव नहीं है।	खनिज विभाग व प्रदूषण विभाग की एन.ओ.सी. दोनो जरूरी है।	–
14	आर. के. ब्रिक्स फील्ड, धौलपुर	सीता राम गोयल पुत्र रामवीर प्रसाद नगला उदैया रोड, खेरागढ, आगरा 9719245046	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक में परिवर्तन के इच्छुक हैं। लेकिन कोरोना महामारी स्थिति आर्थिक खराब अभी संभव नहीं है।	खनिज विभाग व प्रदूषण विभाग की एन.ओ.सी. से ही भट्टे संचालित हो।	–
15	शिवम् ब्रिक्स फील्ड, देशावली, राजाखेड़ा, धौलपुर	विजयसिंह, ग्राम–पनवारी तह0 किरावली, आगरा 9458849942	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक में परिवर्तन के इच्छुक हैं। लेकिन कोरोना महामारी स्थिति आर्थिक खराब अभी संभव नहीं है।	राजस्व विभाग को भूमि रूपांतरण एंव प्रदूषण विभाग की एन.ओ.सी. से ही भट्टे संचालित हो।	वायु प्रदूषण कम करने के लिए भट्टे कोयले से ही चलाये जाये।
16	सतेन्द्र ब्रिक्स फील्ड, अकबरपुर राजाखेड़ा, धौलपुर	ळरीओम पुत्र शिवसिंह 9414025768	आशानी से भट्टे पर प्रदूषण की जांच करायी जायें।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है। जिग–जैग तकनीक में परिवर्तन करवाना अभी संभव नहीं हैं।	कोविड–19 डाउन के कारण ईंट भट्टों के उद्योग को काफी आर्थिक नुकसान हुआ हैं।	राजस्व विभाग को भूमि रूपांतरण एंव प्रदूषण विभाग की एन.ओ.सी. से ही भट्टे संचालित हो।

17	लक्ष्मी ब्रिक्स फील्ड्स, मेहदवार नं0 1, राजाखेड़ा, धौलपुर	लतेश कुमार गुप्ता, 43, गुलमोहर राजपुर आगरा 9719155105	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है। वायु प्रदुषण की जाँच आशान तरीके से भट्टें पर कराई जाये।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक में परिवर्तन के इच्छुक हैं। लेकिन कोरोना महामारी स्थिति आर्थिक खराब अभी संभव नहीं है।	राजस्व विभाग को भूमि रूपांतरण एंव प्रदूषण विभाग की एन.ओ.सी. से ही भट्टे संचालित हों।	वायु प्रदूषण कम करने के लिए भट्टे कोयले से ही चलाये जाये।	
18	आशीष ब्रिक्स फील्ड्स, गोपालपुरा मोड़, राजाखेड़ा, धौलपुर	अशोक कुमार गुप्ता, 11 रतनविहार नेहरू एतलेव के पास, शमसावाड रोड, राजपुर आगरा, 9719161922, 9193061922	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है। वायु प्रदुषण की जाँच आशान तरीके से भट्टें पर कराई जाये।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	जिग–जैग तकनीक में परिवर्तन के इच्छुक हैं। लेकिन कोरोना महामारी स्थिति आर्थिक खराब अभी संभव नहीं है।	राजस्व विभाग को भूमि रूपांतरण एंव प्रदूषण विभाग की एन.ओ.सी. से ही भट्टे संचालित हो।	वायु प्रदूषण कम करने के लिए भट्टे कोयले से ही चलाये जाये।	
19	गायत्री ब्रिक्स फील्ड्स, मेहदवार नं0 1, राजाखेडा धौलपुर	शिवम् अग्रवाल, ककुआ आगरा	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है। वायु प्रदुषण की जाँच आशान तरीके से भट्टें पर कराई जाये।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	कोविड–19 डाउन के कारण ईंट भट्टों के उधोग को काफी आर्थिक नुकसान हुआ हैं। जिग–जैग तकनीक में परिवर्तन करवाना अभी संभव नहीं है।	राजस्व विभाग को भूमि रूपांतरण एंव प्रदूषण विभाग की एन.ओ.सी. से ही भट्टे संचालित हो।	वायु प्रदूषण कम करने के लिए भट्टे कोयले से ही चलाये जाये।	
20	प्रमोद ब्रिक्स फील्ड्स, मेहदवार नं0 1, सिंधावली रोड, राजाखेड़ा, धौलपुर	राजेन्द्र कुमार अग्रवाल, ककुआ, ग्वालियर रोड, आगरा, 9412300905	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है। वायु प्रदुषण की जाँच आशान तरीके से भट्टें पर कराई जाये।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	कोविड–19 डाउन के कारण ईंट भट्टों के उधोग को काफी आर्थिक नुकसान हुआ हैं। जिग–जैग तकनीक में परिवर्तन करवाना अभी संभव नहीं है।	राजस्व विभाग को भूमि रूपांतरण एंव प्रदूषण विभाग की एन.ओ.सी. से ही भट्टे संचालित हो।	वायु प्रदूषण कम करने के लिए भट्टे कोयले से ही चलाये जाये।	
21	भगवती ब्रिक्स फील्ड्स, जरिया नं0 1, डोंगरपुर रोड, अम्बरपुर राजाखेड़ा, धौलपुर	प्रमोद अग्रवाल पुत्र राजेन्द्र कुमार अग्रवाल, ककुआ, ग्वालियर रोड, आगरा 9717391629	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है। वायु प्रदुषण की जाँच आशान तरीके से भट्टें पर कराई जाये।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	कोविड–19 डाउन के कारण ईंट भट्टों के उधोग को काफी आर्थिक नुकसान हुआ हैं। जिग–जैग तकनीक में परिवर्तन करवाना अभी संभव नहीं है।	राजस्व विभाग को भूमि रूपांतरण एंव प्रदूषण विभाग की एन.ओ.सी. से ही भट्टे संचालित हो।	वायु प्रदूषण कम करने के लिए भट्टे कोयले से ही चलाये जाये।	

22	मुन्ना ब्रिक्स फील्ड्, गोपालपुरा राजाखेड़ा,	मुन्ना लाल 9719569733	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है। वायु प्रदुषण की जाँच आशान तरीके से भट्टें पर कराई जाये।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	कोविड–19 डाउन के कारण ईंट भट्टों के उधोग को काफी आर्थिक नुकसान हुआ हैं। जिग–जैग तकनीक में परिवर्तन करवाना अभी संम्भव नहीं है।	राजस्व विभाग को भूमि रूपांतरण एंव प्रदूषण विभाग की एन.ओ.सी. से ही भट्टे संचालित हो।	वायु प्रदूषण कम करने के लिए भट्टे कोयले से ही चलाये जाये।
23	जय कैला ईंट उधोग, सिंघावली कला, राजाखेड़ा, धौलपुर	रामकुमार गोयल, 197 डिफेस स्टेट, आगरा	110 फीट चिमनी व ग्रेविटी सैटलिंग चेम्बर लगाया गया है। वायु प्रदुषण की जाँच आशान तरीके से भट्टें पर कराई जाये।	PNG उपलब्ध होने पर परिवर्तित करा लिया जावेगा	कोविड–19 डाउन के कारण ईंट भट्टों के उधोग को काफी आर्थिक नुकसान हुआ हैं। जिग–जैग तकनीक में परिवर्तन करवाना अभी संम्भव नहीं है।	राजस्व विभाग को भूमि रूपांतरण एंव प्रदूषण विभाग की एन.ओ.सी. से ही भट्टे संचालित हो।	वायु प्रदूषण कम करने के लिए भट्टे कोयले से ही चलाये जाये।

ईंट भट्टो के संचालकों द्वारा दी गई अन्य जानकारी:–

1. कोयल एवं तूडी का स्त्रोतः– बिहार, आसाम, अडानीपोड के द्वारा
2. एक ईंट भट्टें में 25 से 30 लाख ईंटें बनाने हेतु 12000 क्विंटल तूडी (अनुमानित लागत 30 लाख) सालाना उपयोग में आती है।
3. एक ईंट भट्टें में 25 से 30 लाख ईंटें बनाने हेतु 300 टन कोयला (अनुमानित लागत 1350000 लाख) सालाना उपयोग में आता है।

CENTRAL LABORATORY
RAJASTHAN STATE POLLUTION CONTROL BOARD

4, Paryavaran Marg, Institutional Area, Jhalana Doongri, Jaipur (Rajasthan)
Phone No. 0141 – 5159607, 5159648, 5159665
Fax No. 0141 – 5159665

F11 (42) RPCB/Lab Air /2021-22/ 762

Date: 22/7/21

Regional Officer,
Regional Office,
Rajasthan State Pollution Control Board,
Bharatpur

Sub.:- Analysis reports of Air samples bearing report Nos. 7711-7422.

Sir,

Kindly find enclosed the analysis reports of Air samples bearing report Nos. 7711-7422 collected by Board Officials for information and necessary action.

Encl.:- As above (12 Analysis Reports)

Yours Sincerely,

Chief Scientific Officer

8047/2021/TECH-RD (Bhopal)

12

FORM - X
RAJASTHAN STATE POLLUTION CONTROL BOARD
REPORT OF THE STATE BOARD ANALYST
(See Rule - 10)
Final Report

Report No. : **7411**
Report On : **22/07/2021**

I hereby certify that I **Sheeba**, State Board Analyst duly appointed **under sub Section(2) of Section 29 of the Air (Prevention & Control of Pollution) Act, 1981** received on the **12/07/2021** from **Shivendra Singh, JSO, Central Laboratory ,RSPCB Central Laboratory** a sample of **Ambient Air Quality** of **Village - Mithawali , Tehsil - Rajakhera , Dholpur** Collected from **Ambient Air Quality Monitoring at House of Shri Mangal Jain, Village - Mithawali, Tehsil - Rajakhera, Dholpur** Collected on **07/07/2021**. The Sample was in a condition fit for analysis as reported below :-

I further certify that I have analyzed the aforementioned sample on **22/07/2021** and declare the result of the analysis to be as below :-

S. No.	Parameters	Result
1	Particulate Matter (PM10) µg/m3	317
2	PM 2.5 ug/m3	137

The condition of the seals, fastening and container on receipt was as follows : **Intact**
Signed This On **22/07/2021**

BOARD ANALYST
Rajasthan State Pollution Control Board
Head Office (Central Laboratory)
4, Institutional Area, Jhalana Doongari,
Jaipur-302 004
Phone: 0141-5159648,5159607
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8047/2021/TECH-RD (Bhopal)

FORM - X
RAJASTHAN STATE POLLUTION CONTROL BOARD
REPORT OF THE STATE BOARD ANALYST
(See Rule - 10)
Final Report

Report No. : **7412**
Report On : **22/07/2021**

I hereby certify that I **Sheeba**, State Board Analyst duly appointed **under sub Section(2) of Section 29 of the Air (Prevention & Control of Pollution) Act, 1981** received on the **12/07/2021** from **Shivendra Singh, JSO, Central Laboratory ,RSPCB Central Laboratory** a sample of **Ambient Air Quality** of **Village - Jarah , Tehsil - Rajakhera , Dholpur** Collected from **Ambient Air Quality Monitoring at House of Shri Pappu Parashar, Village - Jarah, Tehsil - Rajakhera, Dholpur** Collected on **07/07/2021**. The Sample was in a condition fit for analysis as reported below :-

I further certify that I have analyzed the aforementioned sample on **22/07/2021** and declare the result of the analysis to be as below :-

S. No.	Parameters	Result
1	Particulate Matter (PM10) µg/m3	309
2	PM 2.5 ug/m3	124

The condition of the seals, fastening and container on receipt was as follows : **Intact**
Signed This On **22/07/2021**

BOARD ANALYST
Rajasthan State Pollution Control Board
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4, Institutional Area, Jhalana Doongari,
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8047/2021/TECH-RD (Bhopal)

10

FORM - X
RAJASTHAN STATE POLLUTION CONTROL BOARD
REPORT OF THE STATE BOARD ANALYST
(See Rule - 10)

Final Report

Report No. : **7413**
Report On : **22/07/2021**

I hereby certify that I **Sheeba**, State Board Analyst duly appointed **under sub Section(2) of Section 29 of the Air (Prevention & Control of Pollution) Act, 1981** received on the **12/07/2021** from **Sanjay Kumar Singh, JSO, Central Laboratory ,RSPCB Central Laboratory** a sample of **Ambient Air Quality** of **Village - Bichola , Tehsil - Rajakhera , Dholpur** Collected from **Ambient Air Quality Monitoring at House of Shri Ram Awtar, Village - Bichola, Tehsil - Rajakhera, Dholpur** Collected on **07/07/2021**. The Sample was in a condition fit for analysis as reported below :-

I further certify that I have analyzed the aforementioned sample on **22/07/2021** and declare the result of the analysis to be as below :-

S. No.	Parameters	Result
1	Particulate Matter (PM10) µg/m3	200
2	PM 2.5 ug/m3	92

The condition of the seals, fastening and container on receipt was as follows : **Intact**
Signed This On **22/07/2021**

BOARD ANALYST

Rajasthan State Pollution Control Board
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4, Institutional Area, Jhalana Doongari,
Jaipur-302 004
Phone: 0141-5159648,5159607
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8047/2021/TECH-RD (Bhopal)

9

FORM - X
RAJASTHAN STATE POLLUTION CONTROL BOARD
REPORT OF THE STATE BOARD ANALYST
(See Rule - 10)
Final Report

Report No. : **7414**
Report On : **22/07/2021**

I hereby certify that I **Sheeba**, State Board Analyst duly appointed **under sub Section(2) of Section 29 of the Air (Prevention & Control of Pollution) Act, 1981** received on the **12/07/2021** from **Shivendra Singh, JSO, Central Laboratory ,RSPCB Central Laboratory** a sample of **Ambient Air Quality** of **Village - Mithawali , Tehsil - Rajakhera , Dholpur** Collected from **Ambient Air Quality Monitoring at House of Shri Mangal Jain, Village - Mithawali, Tehsil - Rajakhera, Dholpur** Collected on **08/07/2021**. The Sample was in a condition fit for analysis as reported below :-

I further certify that I have analyzed the aforementioned sample on **22/07/2021** and declare the result of the analysis to be as below :-

S. No.	Parameters	Result
1	Particulate Matter (PM10) µg/m3	279
2	PM 2.5 ug/m3	133

The condition of the seals, fastening and container on receipt was as follows : **Intact**
Signed This On **22/07/2021**

BOARD ANALYST

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4, Institutional Area, Jhalana Doongari,
Jaipur-302 004
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8047/2021/TECH-RD (Bhopal)

8

FORM - X
RAJASTHAN STATE POLLUTION CONTROL BOARD
REPORT OF THE STATE BOARD ANALYST
(See Rule - 10)
Final Report

Report No. : **7415**
Report On : **22/07/2021**

I hereby certify that I **Sheeba**, State Board Analyst duly appointed **under sub Section(2) of Section 29 of the Air (Prevention & Control of Pollution) Act, 1981** received on the **12/07/2021** from **Sanjay Kumar Singh, JSO, Central Laboratory ,RSPCB Central Laboratory** a sample of **Ambient Air Quality** of **Village - Jarah , Tehsil - Rajakhera , Dholpur** Collected from **Ambient Air Quality Monitoring at House of Shri Pappu Parashar, Village - Jarah, Tehsil - Rajakhera, Dholpur** Collected on **08/07/2021**. The Sample was in a condition fit for analysis as reported below :-

I further certify that I have analyzed the aforementioned sample on **22/07/2021** and declare the result of the analysis to be as below :-

S. No.	Parameters	Result
1	Particulate Matter (PM10) µg/m3	117
2	PM 2.5 ug/m3	58

The condition of the seals, fastening and container on receipt was as follows : **Intact**
Signed This On **22/07/2021**

BOARD ANALYST
Rajasthan State Pollution Control Board
Head Office (Central Laboratory)
4, Institutional Area, Jhalana Doongari,
Jaipur-302 004
Phone: 0141-5159648,5159607
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8047/2021/TECH-RD (Bhopal)

7

FORM - X
RAJASTHAN STATE POLLUTION CONTROL BOARD
REPORT OF THE STATE BOARD ANALYST
(See Rule - 10)
Final Report

Report No. : **7416**
Report On : **22/07/2021**

I hereby certify that I **Sheeba**, State Board Analyst duly appointed **under sub Section(2) of Section 29 of the Air (Prevention & Control of Pollution) Act, 1981** received on the **12/07/2021** from **Sanjay Kumar Singh, JSO, Central Laboratory ,RSPCB Central Laboratory** a sample of **Ambient Air Quality** of **Village - Bichola , Tehsil - Rajakhera , Dholpur** Collected from **Ambient Air Quality Monitoring at House of Shri Ram Awtar, Village - Bichola, Tehsil - Rajakhera, Dholpur** Collected on **08/07/2021**. The Sample was in a condition fit for analysis as reported below :-

I further certify that I have analyzed the aforementioned sample on **22/07/2021** and declare the result of the analysis to be as below :-

S. No.	Parameters	Result
1	Particulate Matter (PM10) µg/m3	254
2	PM 2.5 ug/m3	118

The condition of the seals, fastening and container on receipt was as follows : **Intact**
Signed This On **22/07/2021**

BOARD ANALYST
Rajasthan State Pollution Control Board
Head Office (Central Laboratory)
4, Institutional Area, Jhalana Doongari,
Jaipur-302 004
Phone: 0141-5159648,5159607
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8047/2021/TECH-RD (Bhopal)

6

FORM - X
RAJASTHAN STATE POLLUTION CONTROL BOARD
REPORT OF THE STATE BOARD ANALYST
(See Rule - 10)
Final Report

Report No. : **7417**
Report On : **22/07/2021**

I hereby certify that I **Sheeba**, State Board Analyst duly appointed **under sub Section(2) of Section 29 of the Air (Prevention & Control of Pollution) Act, 1981** received on the **12/07/2021** from **Shivendra Singh, JSO, Central Laboratory ,RSPCB Central Laboratory** a sample of **Ambient Air Quality** of **Village - Gangoliyapura , Tehsil - Rajakhera , Dholpur** Collected from **Ambient Air Quality Monitoring at House of Shri Bachan Singh, Village - Gangoliyapura, Tehsil - Rajakhera, Dholpur** Collected on **09/07/2021**. The Sample was in a condition fit for analysis as reported below :-

I further certify that I have analyzed the aforementioned sample on **22/07/2021** and declare the result of the analysis to be as below :-

S. No.	Parameters	Result
1	Particulate Matter (PM10) µg/m3	155
2	PM 2.5 ug/m3	76

The condition of the seals, fastening and container on receipt was as follows : **Intact**
Signed This On **22/07/2021**

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8047/2021/TECH-RD (Bhopal)

5

FORM - X
RAJASTHAN STATE POLLUTION CONTROL BOARD
REPORT OF THE STATE BOARD ANALYST
(See Rule - 10)
Final Report

Report No. : **7418**
Report On : **22/07/2021**

I hereby certify that I **Sheeba**, State Board Analyst duly appointed **under sub Section(2) of Section 29 of the Air (Prevention & Control of Pollution) Act, 1981** received on the **12/07/2021** from **Sanjay Kumar Singh, JSO, Central Laboratory ,RSPCB Central Laboratory** a sample of **Ambient Air Quality** of **Village - Teerajpur , Tehsil - Rajakhera , Dholpur** Collected from **Ambient Air Quality Monitoring at House of Shri Sitaram, Village - Teerajpur, Tehsil - Rajakhera, Dholpur** Collected on **09/07/2021**. The Sample was in a condition fit for analysis as reported below :-

I further certify that I have analyzed the aforementioned sample on **22/07/2021** and declare the result of the analysis to be as below :-

S. No.	Parameters	Result
1	Particulate Matter (PM10) µg/m3	99
2	PM 2.5 ug/m3	48

The condition of the seals, fastening and container on receipt was as follows : **Intact**
Signed This On **22/07/2021**

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8047/2021/TECH-RD (Bhopal)

4

FORM - X
RAJASTHAN STATE POLLUTION CONTROL BOARD
REPORT OF THE STATE BOARD ANALYST
(See Rule - 10)
Final Report

Report No. : **7419**
Report On : **22/07/2021**

I hereby certify that I **Sheeba**, State Board Analyst duly appointed **under sub Section(2) of Section 29 of the Air (Prevention & Control of Pollution) Act, 1981** received on the **12/07/2021** from **Shivendra Singh, JSO, Central Laboratory ,RSPCB Central Laboratory** a sample of **Ambient Air Quality** of **Village - Beech Ka Pura , Tehsil - Rajakhera , Dholpur** Collected from **Ambient Air Quality Monitoring at House of Shri Shrikant Singh Parmar, Village - Beech Ka Pura, Tehsil - Rajakhera, Dholpur** Collected on **09/07/2021**. The Sample was in a condition fit for analysis as reported below :-

I further certify that I have analyzed the aforementioned sample on **22/07/2021** and declare the result of the analysis to be as below :-

S. No.	Parameters	Result
1	Particulate Matter (PM10) µg/m3	109
2	PM 2.5 ug/m3	55

The condition of the seals, fastening and container on receipt was as follows : **Intact**
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8047/2021/TECH-RD (Bhopal)

3

FORM - X
RAJASTHAN STATE POLLUTION CONTROL BOARD
REPORT OF THE STATE BOARD ANALYST
(See Rule - 10)

Final Report

Report No. : **7420**

Report On : **22/07/2021**

I hereby certify that I **Sheeba**, State Board Analyst duly appointed **under sub Section(2) of Section 29 of the Air (Prevention & Control of Pollution) Act, 1981** received on the **12/07/2021** from **Shivendra Singh, JSO, Central Laboratory ,RSPCB Central Laboratory** a sample of **Ambient Air Quality** of **Village - Gangoliyapura , Tehsil - Rajakhera , Dholpur** Collected from **Ambient Air Quality Monitoring at House of Shri Bachan Singh, Village - Gangoliyapura, Tehsil - Rajakhera, Dholpur** Collected on **10/07/2021**. The Sample was in a condition fit for analysis as reported below :-

I further certify that I have analyzed the aforementioned sample on **22/07/2021** and declare the result of the analysis to be as below :-

S. No.	Parameters	Result
1	Particulate Matter (PM10) µg/m3	77
2	PM 2.5 ug/m3	37

The condition of the seals, fastening and container on receipt was as follows : **Intact**

Signed This On **22/07/2021**

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8047/2021/TECH-RD (Bhopal)

FORM - X
RAJASTHAN STATE POLLUTION CONTROL BOARD
REPORT OF THE STATE BOARD ANALYST
(See Rule - 10)

Final Report

Report No. : **7421**

Report On : **22/07/2021**

I hereby certify that I **Sheeba**, State Board Analyst duly appointed **under sub Section(2) of Section 29 of the Air (Prevention & Control of Pollution) Act, 1981** received on the **12/07/2021** from **Sanjay Kumar Singh, JSO, Central Laboratory ,RSPCB Central Laboratory** a sample of **Ambient Air Quality** of **Village - Teerajpur , Tehsil - Rajakhera , Dholpur** Collected from **Ambient Air Quality Monitoring at House of Shri Sitaram, Village - Teerajpur, Tehsil - Rajakhera, Dholpur** Collected on **10/07/2021**. The Sample was in a condition fit for analysis as reported below :-

I further certify that I have analyzed the aforementioned sample on **22/07/2021** and declare the result of the analysis to be as below :-

S. No.	Parameters	Result
1	Particulate Matter (PM10) µg/m3	75
2	PM 2.5 ug/m3	33

The condition of the seals, fastening and container on receipt was as follows : **Intact**

Signed This On **22/07/2021**

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8047/2021/TECH-RD (Bhopal)

FORM - X
RAJASTHAN STATE POLLUTION CONTROL BOARD
REPORT OF THE STATE BOARD ANALYST
(See Rule - 10)
Final Report

Report No. : **7422**
Report On : **22/07/2021**

I hereby certify that I **Sheeba**, State Board Analyst duly appointed **under sub Section(2) of Section 29 of the Air (Prevention & Control of Pollution) Act, 1981** received on the **12/07/2021** from **Sanjay Kumar Singh, JSO, Central Laboratory ,RSPCB Central Laboratory** a sample of **Ambient Air Quality** of **Village - Beech Ka Pura , Tehsil - Rajakhera , Dholpur** Collected from **Ambient Air Quality Monitoring at House of Shri Shrikant Singh Parmar, Village - Beech Ka Pura, Tehsil - Rajakhera, Dholpur** Collected on **10/07/2021**. The Sample was in a condition fit for analysis as reported below :-

I further certify that I have analyzed the aforementioned sample on **22/07/2021** and declare the result of the analysis to be as below :-

S. No.	Parameters	Result
1	Particulate Matter (PM10) µg/m3	72
2	PM 2.5 ug/m3	34

The condition of the seals, fastening and container on receipt was as follows : **Intact**
Signed This On **22/07/2021**

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Source Emission Monitoring of Brick kiln (June 2021)

S No.	Location	Fuel		Ambient Temp	Temp. Of Stack in Kelvin	Stack height (in ft)	Portho le height mtr	Stack Diameter (m)	Average Velocity M/Sec.	Moisture%	PM mg/N M^3	O2%	CO2 %
1.	**M/s: Choudhary Ent Udhyog, Nyabas, Beswa,Tahsil- Iglas, Aligarh (UP)**	Coal + Husk	3.6.2021	315	339	110	3.6	2.85	2.278	0.46	269	18.09	1.28
				315	339				2.278	0.59	318	18.09	2.28
				305	339				2.278	0.41	248	17.89	2.87
			8.6.2021	311	345				2.29	0.45	281	18.87	2.01
				309	345				2.29	0.4	338	18.62	1.88
				307	345				2.29	0.43	267	18.62	1.88
2.	**M/s: Bhavya Bricks Works Kandli, Iglas, Aligarh (UP)**		3.6.2021	312	358	110	3.33	3.00	3.19	1.04	210	18.08	1.81
				311	358				3.19	1.17	252	18.61	2.21
				312	358				3.19	1.16	263	17.82	2.91
3.	**M/s: Prem Ent Bhatta Udhyog , Amarpur Dhana, Iglas, Aligarh**		3.6.2021	310	351	110	4	3.05	2.86	0.91	329	18.74	1.46
				310	351				2.86	0.6	288	19.08	2.06
				307	351				2.86	0.48	265	18.32	2.06
			8.6.2021	314	354				2.69	0.67	298	17.98	2.61
				311	354				2.69	0.58	259	18.01	2.81
				307	354				2.69	0.31	248	17.95	2.16
4.	**M/s: Aakash Ent Udhyog, Jahrouli , Iglas, Aligarh (UP)**		3.6.2021	315	359	--	2.7	2.9	3.05	0.28	262	18.83	1.36
				312	359				3.05	0.3	202	17.37	2.91
				309	359				3.05	0.26	236	19.01	1.31
5.	**M/s:Gagndeep Ent Udhyog Digsari, Iglas, Aligarh (UP)**		3.6.2021	307	341	--	2.8	3.2	3.82	0.94	256	18.97	1.34
				307	341				3.82	0.73	230	17.38	3.02
				307	341				3.82	0.42	268	19.02	1.34
6.	**M/s: Shivay Ent Udhyog Kanska, Gonda, Iglas, Aligarh**		3.6.2021	313	355	--	2.7	L= 3.1 W = 2.1	3.75	0.49	306	19.01	1.04
				308	355				3.75	0.33	248	18.12	2.08
				307	355				3.75	0.29	261	18.51	2.21
7.	**M/s: Balaji Ent Udhyog Naglasab, Gonda, Iglas, Aligarh**		3.6.2021	315	351	--	2.5	L= 3.1 W = 2.9	2.20	1.19	282	17.99	2.90
				312	351				2.20	0.83	371	18.57	2.01
				309	351				2.20	0.83	261	19.01	1.31
8.	**M/s: Maa Bhagvati Ent Udhyog Nagla Jaiher hasan Gonda, Aligarh**		3.6.2021	318	349	100	2.9	2.8	2.11	0.27	310	18.47	2.07
				313	349				2.11	0.43	289	19.05	1.41
				311	349				2.11	0.32	273	18.03	2.14

Meteorological Data of Agra year 2019 & 2020

Ecotech Monitoring Station, U.P.P.C.B., AGRA 2019								
Month	WS	WD	AT	RH	BP	SR	RF	VWS
Unit	m/sec	Degrees	^{0C}	%	mmHg	W/m2	mm	m/sec
JAN,19	1.89	351.9	13.3	66.6	745.4	10.7	19.0	-0.19
FEB.19	2.22	355.8	15.7	69.8	745.6	127.4	23.0	-0.20
MARCH,19	2.48	358.2	22.8	51.6	746.2	230.7	28.0	-0.21
APRIL,19	2.38	358.0	32.6	40.2	747.1	263.4	68.0	-0.21
MAY,19	2.81	359.6	35.2	34.8	747.4	282.3	26.0	-0.22
JUNE,19	2.81	356.9	36.5	45.8	747.5	264.2	120	-0.20
JULY,19	2.83	353.4	31.6	70.3	747.1	224.2	1060	-0.20
AUG,19	2.09	355.3	29.7	80.5	746.9	193.4	961	-0.20
SEP,19	1.47	193.3	29.4	80.1	746.8	157.7	472	-0.19
OCT,19	1.12	159.9	28.2	55.5	746.7	200.6	22.0	-0.20
NOV,19	1.44	195.6	22.6	58.8	746.1	144.0	22.0	-0.20
DEC,19	1.29	234.2	11.8	77.2	745.2	117.6	60.0	-0.20
AVG	**2.07**	**302.7**	**25.8**	**60.9**	**746.5**	**184.7**	**2881.3**	**-0.20**

Ecotech Monitoring Station, U.P.P.C.B., AGRA 2020								
Month	WS	WD	AT	RH	BP	SR	RF	VWS
Unit	m/sec	Degrees	^{0C}	%	mmHg	W/m2	mm	m/sec
JAN,20	1.71	222.0	12.3	77.8	745.3	121.2	158.0	-0.20
FEB.20	2.22	227.0	17.3	61.1	745.7	151.4	16.0	-0.20
MARCH,20	2.20	226.4	22.4	60.5	746.1	164.7	159.0	-0.20
APRIL,20	2.25	191.3	30.4	41.4	746.9	202.8	32.0	-0.20
MAY,20	2.60	192.9	35.1	43.1	747.4	229.9	95.0	-0.20
JUNE,20	2.46	164.5	34.7	54.6	747.3	248.3	16.0	-0.20
JULY,20	2.60	273.1	33.0	65.4	747.2	233.3	360	-0.20
AUG,20	2.28	193.6	29.6	80.5	746.8	154.9	960	-0.19
SEP,20	2.00	139.9	32.5	63.0	747.1	203.9	34	-0.20
OCT,20	1.47	128.6	29.1	42.7	746.7	196.9	0.0	-0.19
NOV,20	1.28	152.7	20.2	54.1	745.9	147.9	51.0	-0.20
DEC,20	1.64	211.9	15.3	62.5	745.5	134.9	0.0	-0.20
AVG	**2.06**	**193.7**	**26.0**	**58.9**	**746.5**	**182.5**	**1881.0**	**-0.20**

Ratio of CAAQMS to AOD data

City	CAAQMS/AOD ratio
Jhind	1.08
Bhiwani	1.12
Agra	0.96
Mujjafarpur	1.07
Sonipat	0.99
Bulandsahar	1.00
Average ratio	**1.04**

Jhind			
2019	**CAAQMS**	**AOD**	**CAAQMS/AOD ratio**
April	61.74	53.50	1.15
May	78.95	59.00	1.34
June	58.98	61.90	0.95
July	48.99	73.10	0.67
August	33.43	39.20	0.85
September	40.78	46.50	0.88
October	114.51	95.70	1.20
November	197.51	114.30	1.73
December	130.51	135.80	0.96
Avg	**85.04**	**75.44**	**1.08**

Bhiwani			
2019	**CAAQMS**	**AOD**	**CAAQMS/AOD ratio**
Apr-19	72.65	58.4	1.24
May-19	86.95	55.7	1.56
Jun-19	78.22	58.7	1.33
Jul-19	62.00	62.5	0.99
Aug-19	35.80	39	0.92
Sep-19	45.28	43.5	1.04
Oct-19	83.91	94.9	0.88
Nov-19	144.82	117.4	1.23
Dec-19	127.71	147	0.87
Avg	**81.93**	**75.23**	**1.12**

Agra			
2019	**CAAQMS**	**AOD**	**CAAQMS/AOD ratio**
19-Jan	178	139.73	1.27
19-Feb	111	100.26	1.11
19-Mar	79	63.66	1.24
Apr-19	70	59.49	1.18
May-19	67	62.62	1.07
Jun-19	59	49.17	1.20
Jul-19	37	42.35	0.87
Aug-19	39	36.58	1.07
Sep-19	27	38.60	0.70
Oct-19	56	82.53	0.68
Nov-19	81	131.15	0.62
Dec-19	71	153.01	0.46
Avg	**72.92**	**79.93**	**0.96**

Mujjafarpur			
2019	**CAAQMS**	**AOD**	**CAAQMS/AOD ratio**
April	98.80	63.70	1.55
May	87.06	66.10	1.32
June	63.70	59.90	1.06
July	32.31	67.60	0.48
August	32.74	38.30	0.85
September	36.15	40.00	0.90
October	130.04	96.70	1.34
Avg	**68.69**	**61.76**	**1.07**

Sonipat			
2019	**CAAQMS**	**AOD**	**CAAQMS/AOD ratio**
April	75.05	60.50	1.24
May	86.99	59.50	1.46
June	76.27	60.50	1.26
July	49.54	68.10	0.73
August	46.38	40.00	1.16
September	43.11	45.20	0.95
October	50.09	97.10	0.52
November	79.78	126.20	0.63
Avg	**63.40**	**69.64**	**0.99**

Bulandsahar			
Month 2019	**Caaqms**	**AOD**	**CAAQMS/AOD ratio**
April	83.92	64.70	1.30
May	83.47	65.10	1.28
June	56.61	60.50	0.94
July	38.72	55.60	0.70
August	29.41	38.30	0.77
September	27.60	40.80	0.68
October	102.24	97.60	1.05
November	135.00	122.40	1.10
December	175.35	148.60	1.18
Avg	**81.37**	**77.07**	**1.00**

PM10 to PM2.5 ratio of AAQMS Estblish at Agra

AAQM Data of Agra Year 2019			
Manual Monitoring Stations of CPCB	Tajmahal Station Code 001		Ratio PM10/PM2.5
Parameters→	$PM_{2.5}$	PM_{10}	
Months↓			
Jan	191	267	1.40
Feb	122	164	1.34
Mar	74	143	1.93
Apr	64	168	2.63
May	64	168	2.63
June	42	120	2.86
July	31	52	1.68
August	25	32	1.28
September	25	33	1.32
October	115	158	1.37
November	195	231	1.18
December	198	238	1.20

AAQM Data of Agra Year 2020			
Manual Monitoring Stations of CPCB	Tajmahal Station Code 001		Ratio PM10/PM2.5
Parameters→	$PM_{2.5}$	PM_{10}	
Months↓			
Jan	159	196	1.23
Feb	107	156	1.46
Mar	65	105	1.62
June	32	82	2.56
July	27	49	1.81
August	21	26	1.24
September	51	81	1.59
October	113	187	1.65
November	198	258	1.30
December	230	290	1.26
	Average		1.57

#NA-Due to technical problem data was not available. Ambient Air Quality Monitoring work was suspended during the month of April to May-2020 due to nationwide lockdown and different directions received from Government of India, Head office, Delhi and Local administration. After that, monitoring was resumed at all four locations of Agra since 1st June 2020.*