

**Report on Ambient Air Quality & Noise on Deepawali 2021  
(In Compliance With Hon' ble Supreme Court  
order and Hon'ble NGT order)**



**KERALA STATE POLLUTION CONTROL BOARD**

Website: <http://www.keralapcb.nic.in>

## **Deepawali Monitoring**

The Ambient Air Quality Index in Kerala falls in the moderate and better quality in the current year and during the previous years. The Home Department, Government of Kerala in consultation with Kerala State Pollution Control Board issued orders restricting the sale, use and bursting of firecrackers during festival seasons vide G.O dated 02.11.2021 (addendum dated 03.11.2021). Accordingly, only 'Green Crackers' can be sold and used in the State on the occasion of Diwali and its usage was restricted to two hours (between 8.00 pm and 10.00 pm). Also, the usage of fire crackers was banned within 100 metres of silence zone areas such as hospitals, courts, educational institutions and worship places. The Kerala State Pollution Control Board also issued press release regarding this matter in the leading news papers. The short film on the noise pollution already prepared by the Board also broadcasted through television channel. Article on the use of green crackers in local language was circulated through advertorials in the capital city area. The Board has enabled the participation of Board Technical and Laboratory Staffs to attend the awareness programme conducted by the Regional Office of CPCB at Bangalore on 22.10.2021. The short film and the proceedings of the programme by CPCB were made available to all field officers for wide publicity.

Deepavali is moderately celebrating in Kerala and that too only for maximum of two days. This year the northeast monsoon coincide with Deepavali celebration in the State resulting in crackers not being as active a part of the celebration as compared with the rest of India.

Air quality monitoring stations have been set up in the 13 districts. Numbers of stations are under NAMP: 28 and SAMP: 7 and no of CAAQMS – 9. The continuous monitoring report is being displayed at 9 locations in 6 districts across the State. In Idukki district as the air quality station is away from the HO action is progressing to set up one at the district head quarters. Action is being

taken to display air quality data on the website of District Administration. Action is also progressing for the installation of two continuous noise monitoring stations one being in the capital city, Thiruvananthapuram and the other being at city area of Ernakulam District. There are no non -attainment cities in Kerala.

In compliance with Hon'ble Supreme Court order in 2018 the Kerala PCB has been conducting special monitoring for 14 days for ambient air quality and two days noise monitoring (pre-deepavali day and deepavali day) in selected locations since 2018.

This year Kerala State Pollution Control Board carried out special ambient air quality monitoring in 3 cities for 14 days and noise level monitoring on Pre-Deepavali day (09.11.2020) and on Deepavali day (14.11.2020) as per CPCB Protocol. In addition to this the ambient monitoring for normal parameters and noise monitoring were conducted in all stations for three days.

### **Results and Discussion:**

The monitoring data are attached as Annexure

#### **Ambient Noise Level**

Noise monitoring conducted during night time 6.00 pm to 12.00 midnight. Hence the values could not be compared with the ambient noise level standard. The Lmax of Pre deepavali day ranged from 41.1 to 88.2 dB(A). L max of deepavali day ranged from 43.1 to 91.2 dB(A). The maximum value of 91.2 dB(A) is recorded in one location in the capital city during the period 6.00 pm to 7.00 pm on deepavali day. The noise data during this year deepavali celebration is not increased as compared to 2020 data.

Action is also taken for the continuous noise monitoring station in the Capital city and in the city of Ernakulam district.

## Ambient air quality

In the case of normal parameters such as PM10, PM2.5, SO2, NO2 are well within the air quality standards for the 14 days. In the case of heavy metal the results of one city ie. at **Kozhikkodu** received for Lead, Nickel and Arsenic in PM10 and for Aluminium and Barium in PM 2.5. All of these values are below detection level(BDL) except Al. The values for Aluminium (Al) recorded in the range of 0.82 – 1.80 ( $\mu\text{g}/\text{m}^3$ ). The results of heavy metals in the other two cities will be submitted soon.

## Annexure

### (A) Ambient Noise Monitoring Data: 06.00 p.m. to 12.00 mid night 29.10.2021 and 04.11.2021

1. KERALA STATE POLLUTION CONTROL BOARD, DISTRICT OFFICE, PALAKKAD  
AMBIENT NOISE OF PALAKKAD TOWN  
DATA SHEET FOR AMBIENT NOISE MONITORING (PRE DEEPAVALI DAY)

Location : KSPCB District Office		Date : 29-10-2021 (Pre- Deepavali Day)							
Noise Level Meter									
Make :		CASELLA							
Model :		CEL-633A1/K1							
Sl.No. :		2383042							
Calibration Result of Noise Level Meter									
Calibration		94dB at1000Hz			114dB at 1000 Hz				
Initial		Passed.Cal.Change =0.0db			Passed.Cal.Change =0.1db				
Final		Passed.Cal.Change =0.0db			Passed.Cal.Change =0.1db				
Sampling rate									
Sl.No.	Time duration	File No.	L equivalent dB (A)						
			Leq.	L10	L50	L90	LMin	LMax	
1	6pm-7pm	251	50.8	54.0	47.5	44.5	42.6	75.7	
2	7pm-8pm	252	52.3	53.0	52.0	51.0	50.1	64.1	
3	8pm-9pm	253	53.6	54.5	53.5	52.5	51.0	68.6	
4	9pm-10pm	254	52.8	53.5	52.5	52.0	51.2	67.8	
5	10pm-11pm	Data could not be considered for the calculation due to the interference of high rainfall during the sampling period.							
6	11pm-12am								

Average L equivalent dB (A) :52.5
Monitoring Team & Signature
Notes: (1) The Method for Calculation of Average Leq: To Convert Average of dB(A), each value is to be divided by 10, followed by antilog and finally calculate arithmetic mean. The final value is converted in logarithm followed by multiplication with 10. (2) Monitoring must be carried for 75% of the prescribed day time and night time for legal complaints. (3) L <sub>Max</sub> & L <sub>Min</sub> are to be reported hourly basis and (4) L <sub>50</sub> & L <sub>90</sub> also recorded to understand the intensity of the noise for further course of action.

**KERALA STATE POLLUTION CONTROL BOARD, DISTRICT OFFICE, PALAKKAD**  
**AMBIENT NOISE OF PALAKKAD**

**DATA SHEET FOR AMBIENT NOISE MONITORING (DEEPAVALI DAY)**

Location : KSPCB District Office		Date : <b>04.11.2021 (Deepavali Day)</b>						
Noise Level Meter								
Make :	CASELLA							
Model :	CEL-633A1/K1							
Sl.No. :	2383042							
Calibration Result of Noise Level Meter								
Calibration	94dB at 1000Hz	114dB at 1000 Hz						
Initial	Passed.Cal.Change =0.0db	Passed.Cal.Change =0.1db						
Final	Passed.Cal.Change =0.0db	Passed.Cal.Change =0.1db						
Sampling rate								
Sl.No.	Time duration	File No.	L equivalent dB (A)					
			Leq.	L <sub>10</sub>	L <sub>50</sub>	L <sub>90</sub>	L <sub>Min</sub>	L <sub>Max</sub>
1	6pm-7pm	260	Data could not be considered for the calculation due to the interference of high rainfall during sampling period.					
2	7pm-8pm	261						
3	8pm-9pm	262						
4	9pm-10pm	263	54.9	55.5	53.5	57.5	50.4	76.4
5	10pm-11pm	264	54.5	55.5	53.5	50.5	50.2	75.5
6	11pm-12am	266	50.9	51.5	47.5	46.5	44.6	86.5
Average L equivalent dB (A) : 53.77								
Monitoring Team & Signature								
Notes: (1) The Method for Calculation of Average Leq: To Convert Average of dB(A), each value is to be divided by 10, followed by antilog and finally calculate arithmetic mean. The final value is converted in logarithm followed by multiplication with 10.								

(2) Monitoring must be carried for 75% of the prescribed day time and night time for legal complaints.

(3)  $L_{Max}$  &  $L_{Min}$  are to reported hourly basis and

(4)  $L_{50}$  &  $L_{90}$  also recorded to understand the intensity of the noise for further course of action.

2. KERALA STATE POLLUTION CONTROL BOARD, REGIONAL OFFICE, KOZHIKODE  
 AMBIENT **NOISE OF KOZHIKODE TOWN**  
 DATA SHEET FOR AMBIENT NOISE MONITORING (**PRE DEEPAVALI-DAY**)

Location: MANANCHIRA, KOZHIKODE			Date: 29.10.2021 9(Pre Deepavali day)					
			Time : Day Time / Night Time					
Noise Level Meter - CASELLA								
Make	:	CASELLA						
Model	:	CEL-63X						
Serial No.	:	4278040						
Calibration Result of Noise Level Meter								
Calibration		94 dB at 1000 Hz			114 dB at 1000 Hz			
Initial		Passed Cal. Change = 0.0 db			Passed Cal. Change = 0.1 db			
Final		Passed Cal. Change = 0.0 db			Passed Cal. Change = 0.1 db			
Sampling rate								
S. No.	Time duration	File No.	L equivalent dB(A)					
			Leq.	L <sub>10</sub>	L <sub>50</sub>	L <sub>90</sub>	L <sub>min</sub>	L <sub>max</sub>
1	18.00 to 19 .00 hr		55.5				41.8	85.2
2	19.00 to 20.00 hr		53.4				43	82.3
3	20.00 to 21.00 hr		55.4				42.9	80.5
4	21.00 to 22.00 hr		51.5				41.6	80.4
5	22.00 to 23.00 hr		47.2				41.1	76
6	23.00 to 24.00 hr		45.6				42.7	69.8
Average L equivalent dB(A)			53.03 dB(A)					
Monitoring team & signature			ARJUN P.P.					

Notes: (1) The method for calculation of average Leq: To convert average of dB(A), each value is to be divided by 10, followed by antilog and finally calculate arithmetic mean. The final value is converted in logarithm followed by multiplication with 10. (2) monitoring must be carried for 75% of the prescribed day time and night time for legal compliance, (3)  $L_{max}$  and  $L_{min}$  are to reported hourly basis and (4)  $L_{50}$  &  $L_{90}$  also recorded to understand the intensity of the noise for further course of action.

KERALA STATE POLLUTION CONTROL BOARD, REGIONAL OFFICE, KOZHIKODE  
 AMBIENT **NOISE OF KOZHIKODE TOWN**  
 DATA SHEET FOR AMBIENT NOISE MONITORING (**DEEPAVALI-DAY**)

Location: MANANCHIRA, KOZHIKODE	Date: 04.11.2021 9 (Deepavali day)
Time: Day Time / Night Time	

Noise Level Meter - CASELLA

Make	:	CASELLA
Model	:	CEL-63X
Serial No.	:	4278040

Calibration Result of Noise Level Meter

Calibration	94 dB at 1000 Hz	114 dB at 1000 Hz
Initial	Passed Cal. Change = 0.0 db	Passed Cal. Change = 0.1 db
Final	Passed Cal. Change = 0.0 db	Passed Cal. Change = 0.1 db

Sampling rate

S. No.	Time duration	File No.	L equivalent dB(A)					
			Leq.	L <sub>10</sub>	L <sub>50</sub>	L <sub>90</sub>	L <sub>min</sub>	L <sub>max</sub>
1	18.00 to 19 .00 hr		55.7				43.1	83
2	19.00 to 20.00 hr		59.4				56.6	69.1
3	20.00 to 21.00 hr		57				46	86.4
4	21.00 to 22.00 hr		52				37.9	75.5
5	22.00 to 23.00 hr		53.8				37.8	73.4
6	23.00 to 24.00 hr		44.9				43.3	55.9

Average L equivalent dB(A)

53.6 dB(A)

Monitoring team & signature

ARJUN P.P.

Notes: (1) The method for calculation of average Leq: To convert average of dB(A), each value is to be divided by 10, followed by antilog and finally calculate arithmetic mean. The final value is converted in logarithm followed by multiplication with 10. (2) monitoring must be carried for 75% of the prescribed day time and night time for legal compliance, (3) L<sub>max</sub> and L<sub>min</sub> are to reported hourly basis and (4) L<sub>50</sub>& L<sub>90</sub> also recorded to understand the intensity of the noise for further course of action.

3. Kerala State PCB, Ambient Noise of Capital city :Thiruvananthapuram ( Pre deepavali and Deepavali day)

Location: Plamood	Pre- Deepawali Day (29.10.2021)			Deepawali Day (04.11.2021)		
	L min	L max	Leq dB(A)	L min	L max	Leq dB(A)
18.00 to 19.00 Hr	49.3	81.2	53.7	50.2	91.2	64.6
19.00 to 20.00 Hr	50.3	71.8	54.4	61.7	79.6	66.2
20.00 to 21.00 Hr	48.6	96	58.8	59.1	80	61.9
21.00 to 22.00 Hr	57.6	88.2	68.2	61.1	83.7	64.9
22.00 to 23.00 Hr	55.8	85.1	58.2	48.1	82.6	58.1
23.00 to 24.00 Hr	47.2	73.3	49.7	39.2	71	47.9



## Ambient Air Quality

### (B) Ambient Air Quality monitoring

The station-wise data air quality on Pre-deepawali and Deepawali days are presented below:

#### 1. KOZHIKODE Govt.WOMEN AND CHILDRENS HOSPITAL , KOTTAPARAMBA

Ambient Air Quality monitoring data during Diwali festival 28.10.2021 to 11.11.2021)									
Data/Observation									
Name of the location : KOZHIKODE Govt.WOMEN AND CHILDRENS HOSPITAL , KOTTAPARAMBA									
Date	Regulatory Parameters							Proposed New Parameters	
	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	S O <sub>2</sub> (µg/m <sup>3</sup> )	NO <sub>2</sub> (µg/m <sup>3</sup> )	Metals in PM <sub>10</sub>			Metals/Elements in PM <sub>2.5</sub>	
					Pb (µg/m <sup>3</sup> )	Ni (ng/m <sup>3</sup> )	As (ng/m <sup>3</sup> )	Al (µg/m <sup>3</sup> )	Ba (µg/m <sup>3</sup> )
28.10.2021	32	20	2	4.5	BDL	BDL	BDL	0.82697	BDL
29.10.2021	71	16	2	4.5	BDL	BDL	BDL	1.24682	BDL
30.10.2021	50	47	2	4.5	BDL	BDL	BDL	1.80662	BDL
31.10.2021	41	14	2	4.5	BDL	BDL	BDL	0.85242	BDL
01.11.2021	43	12	2	4.5	BDL	BDL	BDL	1.71756	BDL
02.11.2021	43	8	2	4.5	BDL	BDL	BDL	0.54707	BDL
03.11.2021	23	4	2	4.5	BDL	BDL	BDL	0.82697	BDL
04.11.2021	34	6	2	4.5	BDL	BDL	BDL	1.38677	0.140
05.11.2021	35	8	2	4.5	BDL	BDL	BDL	0.94148	BDL
06.11.2021	35	10	2	4.5	BDL	BDL	BDL	0.91603	BDL
07.11.2021	40	12	2	4.5	BDL	BDL	BDL	0.83969	BDL
08.11.2021	26	13	2	4.5	BDL	BDL	BDL	0.94148	BDL
09.11.2021	55	13	2	4.5	BDL	BDL	BDL	0.83969	BDL
10.11.2021	64	42	2	4.5	BDL	BDL	BDL	1.03053	BDL
11.11.2021	91	48	2	4.5	BDL	BDL	BDL	1.29771	BDL

2.

**Name of the location : PLAMOODU(CODE:358)**

Date	Regulatory Parameters						
	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	S O <sub>2</sub> (µg/m <sup>3</sup> )	NO <sub>2</sub> (µg/m <sup>3</sup> )	Metals in PM <sub>10</sub>		
					Pb (µg/m <sup>3</sup> )	Ni (ng/m <sup>3</sup> )	As (ng/m <sup>3</sup> )
28.10.2021	58	47	2	4.5	BDL	BDL	BDL
29.10.2021	52	35	5.1	4.5	BDL	BDL	BDL
30.10.2021	51	11	4.8	4.5	BDL	BDL	BDL
31.10.2021	43	7	4.9	4.5	BDL	BDL	BDL
01.11.2021	34	18	4.8	9.1	BDL	BDL	BDL
02.11.2021	56	23	5.1	9.3	BDL	BDL	BDL
03.11.2021	69	46	7	10	BDL	BDL	BDL
04.11.2021	69	40	7.6	10	BDL	BDL	BDL
05.11.2021	68	33	6.9	9.8	BDL	BDL	BDL
06.11.2021	47	30	5.1	9.2	BDL	BDL	BDL
07.11.2021	48	25	5.4	9.2	BDL	BDL	BDL
08.11.2021	51	28	4.6	9.3	BDL	BDL	BDL
09.11.2021	50	25	5.3	9.3	BDL	BDL	BDL
10.11.2021	44	32	4.9	9.2	BDL	BDL	BDL
11.11.2021	42	33	5.4	9.3	BDL	BDL	BDL

**3. AMBIENT AIR QUALITY MONITORING DATA  
DURING DEEPAWALI FESTIVAL (28.10.2021 TO  
11.11.2021)**

**Name of location: Ernakulam (South) (24 hrs monitoring)**

Date	Regulatory Parameters						
	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	SO <sub>2</sub> (µg/m <sup>3</sup> )	NO <sub>2</sub> (µg/m <sup>3</sup> )	Metals in PM <sub>10</sub>		
					Pb (µg/m <sup>3</sup> )	Ni (ng/m <sup>3</sup> )	As (ng/m <sup>3</sup> )
28.10.2021	87	46	2	4.5	BDL	BDL	BDL
29.10.2021	57	54	2	4.5	BDL	BDL	BDL
30.10.2021	26	21	2	4.5	BDL	BDL	BDL
31.10.2021	42	41	2	15.1	BDL	BDL	BDL
01.11.2021	39	36	2	4.5	BDL	BDL	BDL
02.11.2021	50	25	2	18.9	BDL	BDL	BDL
03.11.2021	37	48	2	4.5	BDL	BDL	BDL
04.11.2021	69	11	2	12.9	BDL	BDL	BDL
05.11.2021	17	25	2	9.7	BDL	BDL	BDL
06.11.2021	42	29	2	9.8	BDL	BDL	BDL
07.11.2021	27	37	2	9.9	BDL	BDL	BDL
08.11.2021	86	18	2	12.5	BDL	BDL	BDL
09.11.2021	76	61	2	4.5	BDL	BDL	BDL
10.11.2021	81	50	2	12.5	BDL	BDL	BDL
11.11.2021	89	60	2	4.5	BDL	BDL	BDL