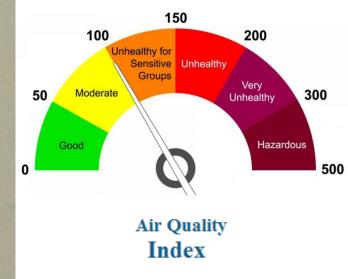
Madhya Pradesh 2022



Ambient Air Quality Statistics





Environment Surveillance Centre M.P Pollution Control Board Bhopal - 462016 Phone No: +91-755-2469180 | Email: ercmppcb@nic.in

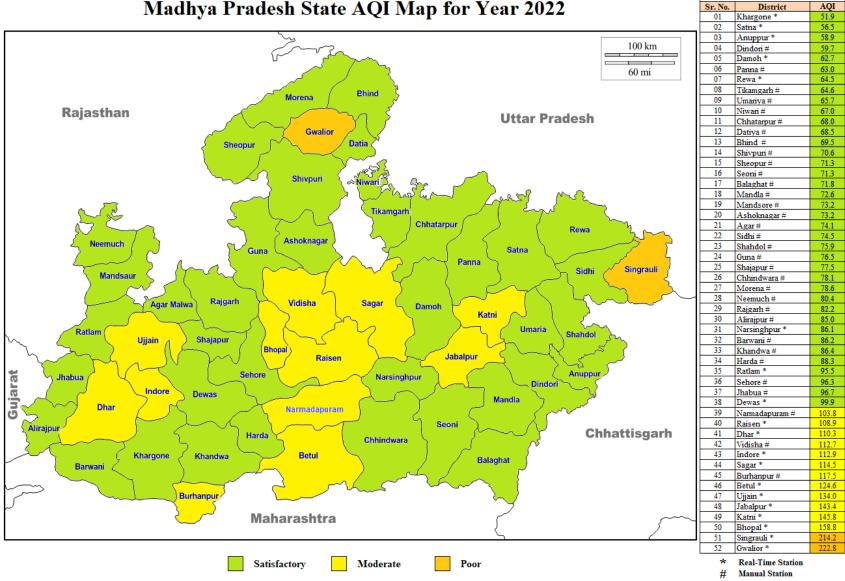
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Key Observations during Real-time Ambient Air Quality Monitoring during the year 2022 in Madhya Pradesh State

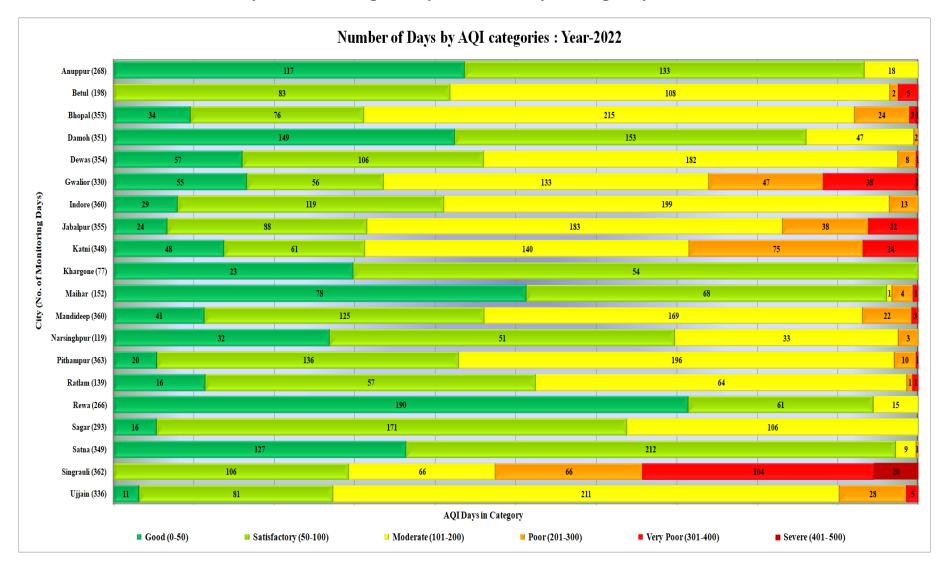
- The AQI value of all the cities at all the locations was observed to be in 'Good' or 'Satisfactory' range during 3rd quarter, i.e. July to September 2022. The only exception was the Paryawaran Parisar location at Bhopal where air quality exceeded to 'Moderate' level in Sept '22. (Pg.-6)
- 38 of the total districts, i.e. 73% were observed to have 'Satisfactory air quality' with AQI value of <100 during the year 2022. (Pg.-3)
- 12 of the total districts were noticed to have 'Moderate air quality'. (Pg.-3)
- Two districts fell under 'Poor air quality' zone during the year 2022. (Pg.-3)
- Rewa observed the highest number of 'Good air quality' days in the State with 94 % days falling under this category. (Pg.-4)
- Singrauli and Betul did not have good air quality even for a day during entire year. (Pg.-4)
- Singrauli is the only district which experienced 'Severe air quality days' with 5.5 % days falling under this category. (Pg.-4)
- Khargone city recorded the best air quality during the year 2022 with annual AQI of 51.9 followed by Satna and Maihar. (Pg.-5)
- Gwalior city recorded the worst air quality during 2022 with annual AQI value of 222.8. (Pg.-5)
- Gwalior and Singrauli were the only stations with annual AQI exceeding 200, i.e. under poor category. (Pg.-5)
- None of the NCAP cities could achieve tag of good or satisfactory air quality. (Pg.-5)
- None of the major cities of the State could achieve the annual standard norms of PM_{2.5} . (Pg.-7)
- Only seven of the monitored cities were found to experience concentration of PM_{2.5} within the prescribed limit of 40 ug/m3. (Pg.-7)
- 13 of the monitored districts seen PM_{2.5} level above the prescribed norms during the year 2022. (Pg.-7)
- Satna city secured the top position among the monitored cities with annual average concentration of PM_{2.5} to be 18.2 ug/m3. (Pg.-7)

- Gwalior city was the lowest in rank with annual average conc. of PM_{2.5} to be 107.6 ug/m3 against the annual limit of 40 ug/m3 (Pg.-7)
- None of the major cities of the State could achieve the prescribed norms of PM₁₀. (Pg.-8)
- Only six of the monitored districts were found to experience concentration of PM₁₀ within the prescribed limit of 60 ug/m3. (Pg.-8)
- 14 of the monitored districts seen PM₁₀ level above the prescribed norms during the year 2022. (Pg.-8)
- Five cities exceeded the PM₁₀ level by over 100% above the prescribed limit of 60 ug/m3. (Pg.-8)
- In two cities the PM₁₀ concentration reached 200% above the set limits. (Pg.-8)
- Maihar city ranked the top among the monitored cities with annual average concentration of PM₁₀ to be 43.8 ug/m3. (Pg.-8)
- Gwalior city recorded the highest PM_{2.5} concentration to the tune of 198.9 ug/m3 among the monitored sites. (Pg.-8)
- The % change in PM_{2.5} level during three years, i.e. 2020-2022, indicates an increase in the concentration at all the four major cities in the State. Similarly there was no decrease in the level in any of the NCAP cities during last three years, thus defeating the objective of NCAP to reduce the air pollution. (Pg.15)
- Gwalior city saw an increase in PM_{2.5} conc. by 64.9% followed by Bhopal 51.4%, Sagar 37.7% and Singrauli 33.3%. (Pg.-15)
- Improvement in PM_{2.5} level was noted at Anuppur, Maihar, Damoh, Ratlam, Katni and Satna station. (Pg.-15)
- The % change in PM₁₀ level during three years, i.e. 2020-2022, indicates an increase in the concentration at all the four major cities in the State. Similarly there was no decrease in the level at any of the NCAP cities during last three years, thus defeating the objective of NCAP to reduce the air pollution. (Pg.16)
- Gwalior city saw an increase in PM₁₀ conc. by 51.3% followed by Bhopal 37.0%, Jabalpur 35.9% and Indore 21.7%. (Pg.-16)
- Improvement in PM₁₀ level was noted at Anuppur, Damoh, Satna, Ratlam, Katni and Maihar station. (Pg.-16)
- CAAQMS at Pthampur operated for the most number of days, i.e. 363, whereas the Gwalior station operated for the least number of days, i.e. 42. Pg/45.



Madhya Pradesh State AQI Map for Year 2022

Average AQI (year-2022)



City-wise AQI categories by number of days during the year 2022

City	AQI	Rank
Khargone	51.9	1
Satna	54.4	2
Maihar	58.5	3
Anuppur	58.9	4
Damoh	62.7	5
Rewa*	64.5	6
Narsinghpur	86.1	7
Ratlam	95.5	8
Dewas*	99.9	9
Mandideep	108.9	10
Pithampur	110.3	11
Indore	112.9	12
Sagar*	114.5	13
Betul	124.6	14
Ujjain	134.0	15
Jabalpur	143.4	16
Katni*	145.8	17
Bhopal*	158.8	18
Singrauli*	214.2	19
Gwalior*	222.8	20

Ranking of Cities based on Average AQI : year-2022

* Average Value is Shown for cities with >1 CAAQMS

Sr. No.	CITY » Month	Anuppur, Collectorate	Betul, Collector Office	Bhopal, T T Nagar	Bhopal, Paryavaran Parisar	Damoh, Shrivastav Colony	Dewas, Govt. MG Hospital	Dewas, Bhopal Chauraha	Gwalior, Maharaj bada	Gwalior, Phool Bagh	Gwalior, City Center	Gwalior, DD Nagar	Indore, Chhoti Gwaltoli	Jabahpur, Marhatal	Katni, Gole Bazar	Katni, Regional Office	Khargone, Nagar Palika	Maihar, Sharda Temple	Mandideep, New Ind. Area	Narsinghpur, Dist. Edu. Off.	Neemuch, Civil Hospital	Pithampur, Sec-2 Ind. Area	Ratlam, Shathri Nagar	Rewa, Regional Office	Rewa, Collector Office	Sagar, Deen Dayal Nagar	Sagar, Collectorate Office	Satna, Bandhavgar Colony	Singrauli, Trauma Centre	Singrauli, Surya Kiran Bha.	Ujjain, Mahakaleshwar Tem.
01	Jan-22	73		163	2	97	52	112		-	223		132		200	171		56	128		-	129	72		99	75		55			149
	DAP Feb-22	27 53	21 121	30 121	÷.	31 63	29-04-2022	31 99	J.	-	30 152		31 144	31 142	31 167	17 98		31 26	31 156		-	31 98	6	2 43	17 103	31 96		27 58		30 231	31 169
02	DAP	28	24	28	6	28	6-04	28	8	-	26		28	28	28	28		11	28		-	28	-	10	22	28		28		28	28
03	Mar-22	58	177	124		100	# 2	117		- 1	138		138		188	188		- 1	138		-	87	-	37	101	97		61	~		149
03	DAP	13	4	31	5	30		31		-	29		31	31	31	15	2023	-	31	202	-	31		17	18	26		30	2023	31	31
04	Apr-22	54		133	202	72	107	131	17	-	127		147	182	225	229	07-08-2022		102	08-08-2022	4	135	-	50	95	116	17	64	07-08-2022		170
	DAP May-22	28 74	30 156	29 156	05-09-2022	30 60	2 141	30 144	21-10-2022	-	23 162	22	30 143	29 148	30 166	22 190		-	30 88	08-	-	29 110	-	20 64	19 100	30 123	21-10-2022	27 77		30 209	26 191
05	DAP	31	29	30		31	25	27	-10	-	28	-20	28	31	30	14	#	-	30	#	-	31		31	12	5	-10	23	*	31	27
-	Jun-22	61		93	#	54	78	78	# 21	101	116	16-11-2022	87		124	-	2	-	78		-	107	-	48	78	60	# 21	67			101
06	DAP	26	26	28		25	30	29	Ŧ	4	29	# 1	30	30	30	-			30		1	30	_	23	12	11	+	30		30	29
07	Jul-22	58	81	55		29	43	41		45	48		55	56	53	44		4	56		-	60	÷.		98	55		50			68
	DAP	22	26	28	2	31	27	28	2 T	11	28		31	30	31	2		-	31	_	-	31	-	31	5	25		31		31	27
08	Aug-22 DAP	36 22	86	69 27	2	26 29	54 29	53 30	8	44 27	59 26		68 31	73 27	61 30	60 5	42 24	-	53 27	51 13	÷	73 30	66 13	30 30	54 4	61 22	1	40 31	36 24	88 31	70 24
	Sep-22	31	83	78	121	37	77	64	8	54	60	8	74	72	70	47	- 24	26	66	48	-	95	58	39	33	71		33			88
09	DAP	28	7	30	21	30	11	30		10	29		28	29	30	21	-	18	30	28	-	30	30	29	15	30		30	12	30	25
10	Oct-22	-	96	115		63	90	108	290	-	124		112		127	109	-3	82	123	117	+	120		69	76	111	133	35			121
10	DAP	-	14	31	29	27	30	29	10	-	28		31	30	31	24	1	31	31	27	Ļ	31	30	30	16	31	10	31	-	31	31
11	Nov-22	76		177	300	94	152	141	275	204	270	297	136		243		56	65		100	-	144	120	46	71		133	44	306		157
	DAP	15	8	30	29	30	30	30	29	14	25	11	30	30	22	23	26	30	30	25	-	30	29	17	23	30	30	30	30	29	30
12	Dec-22	76 28	101	173 31	159 31	56 29	140 29	126 31	28	283 29	306 29	303	121 31	223 29	254 24	140 25	57 27	61 31	135 31	99 26	7	168 31	110 31	52 26	59 22	78 24	146 31	74 31	31	30	160 27
Sou	ce : EnvAle		-										124 A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.				_		stablis			51	51	20	22	-4	51	51	51	50	21

City-wise AQI and Monthly operational Days of CAAQMS

City-wise % deviation in PM2.5 value from standard norms

City	PM2.5 (µg/m ³)	% Deviation from standard value	Rank		
Satna	18.2	-54.5 %	1		
Khargone	18.8	-52.9 %	2		
Rewa*	19.3	-51.8 %	3		
Maihar	20.3	-49.3 %	4		
Anuppur	28.2	-29.6 %	5		
Damoh	30.5	-23.7 %	6		
Mandideep	39.2	-2.1 %	7		
Dewas*	41.7	+4.2 %	8		
Indore	43.1	+7.6 %	9		
Ratlam	43.7	+9.2 %	10		
Narsinghpur	44.6	+11.5 %	11		
Sagar*	<mark>4</mark> 5.9	+14.6 %	12		
Pithampur	46.2	+15.6 %	13		
Betul	48.0	+19.9 %	14		
Ujjain	54.4	+36.1 %	15		
Jabalpur	54.5	+36.3 %	16		
Katni*	61.7	+54.3 %	17		
Bhopal*	63.6	+59.0 %	18		
Singrauli*	96.0	+139.9 %	19		
Gwalior*	107.6	+169.1 %	20		

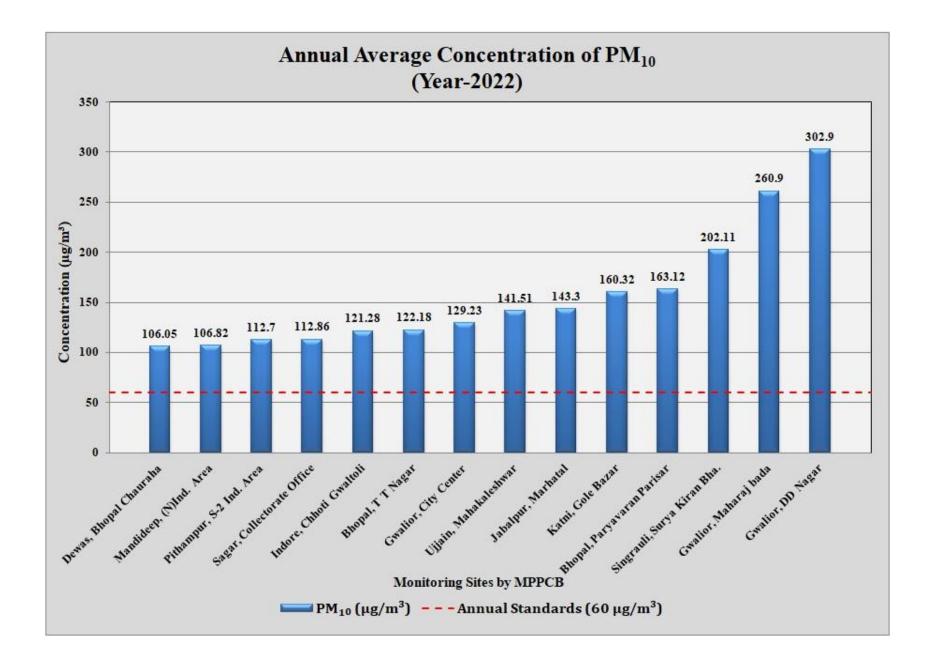
Average Level of PM2.5 in Cities : year-2022 Annual Standard (40 µg/m³)

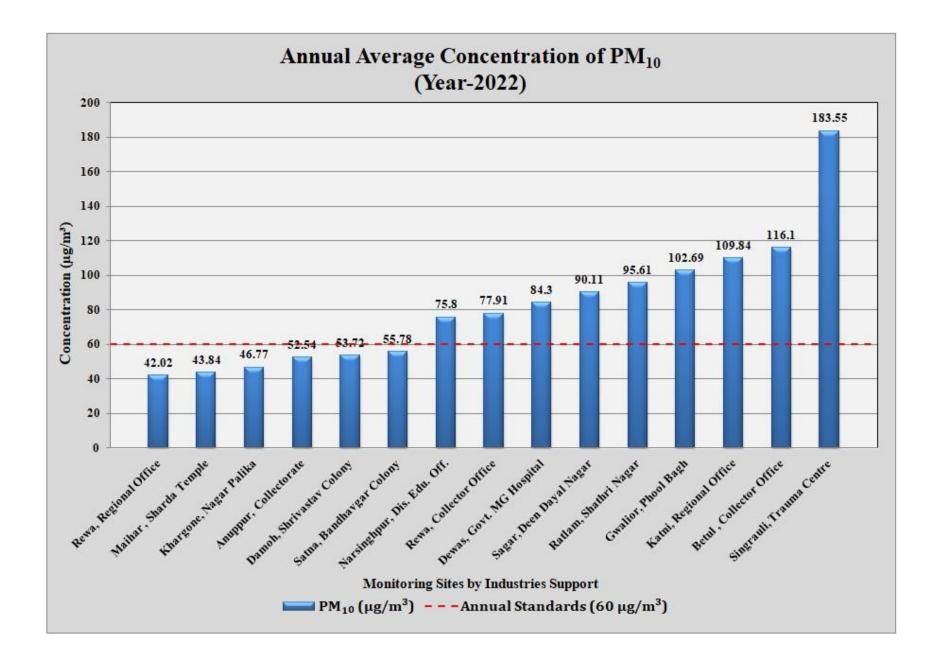
* Average Value is Shown for cities having >1 CAAQMS

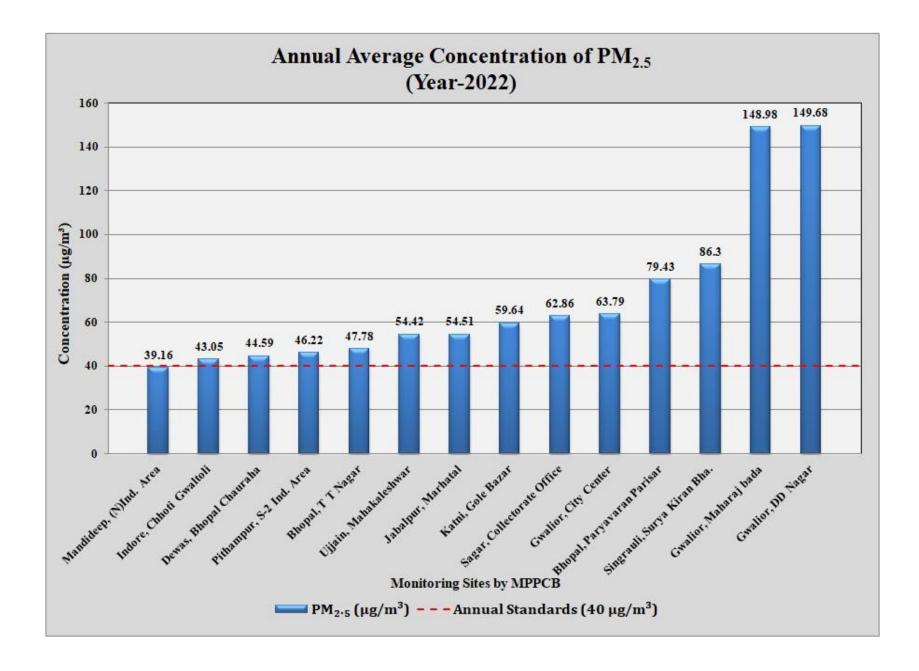
City	PM10 (μg/m ³)	% Deviation from standard value	Rank		
Maihar	43.8	-26.9	1		
Khargone	46.8	-22.1	2		
Anuppur	52.5	-12.4	3		
Damoh	53.7	-10.5	4		
Satna	55.8	-7.0	5		
Rewa*	60.0	-0.1	6		
Narsinghpur	75.8	+26.3	7		
Dewas*	95.2	+58.6	8		
Ratlam	95.6	+59.4	9		
Sagar*	101.5	+69.1	10		
Mandideep	106.8	+78.0	11		
Pithampur	112.7	+87.8	12		
Betul	116.1	+93.5	13		
Indore	121.3	+102.1	14		
Katni*	135.1	+125.1	15		
Ujjain	141.5	+135.9	16		
Bhopal*	142.7	+137.8	17		
Jabalpur	143.3	+138.8	18		
Singrauli*	192.8	+221.4	19		
Gwalior*	198.9	+231.6	20		

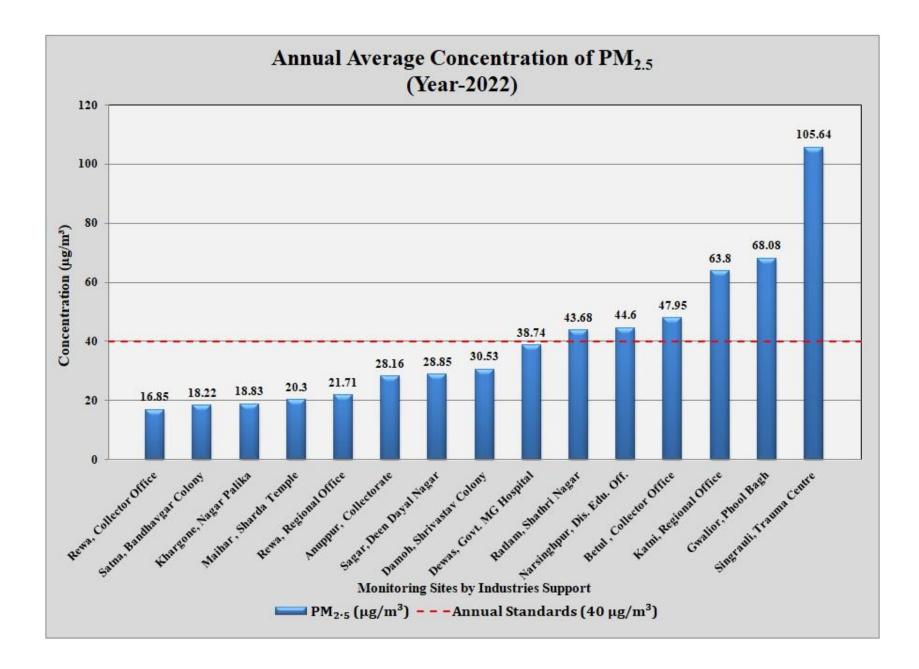
Average Level of PM10 in Cities : year-2022

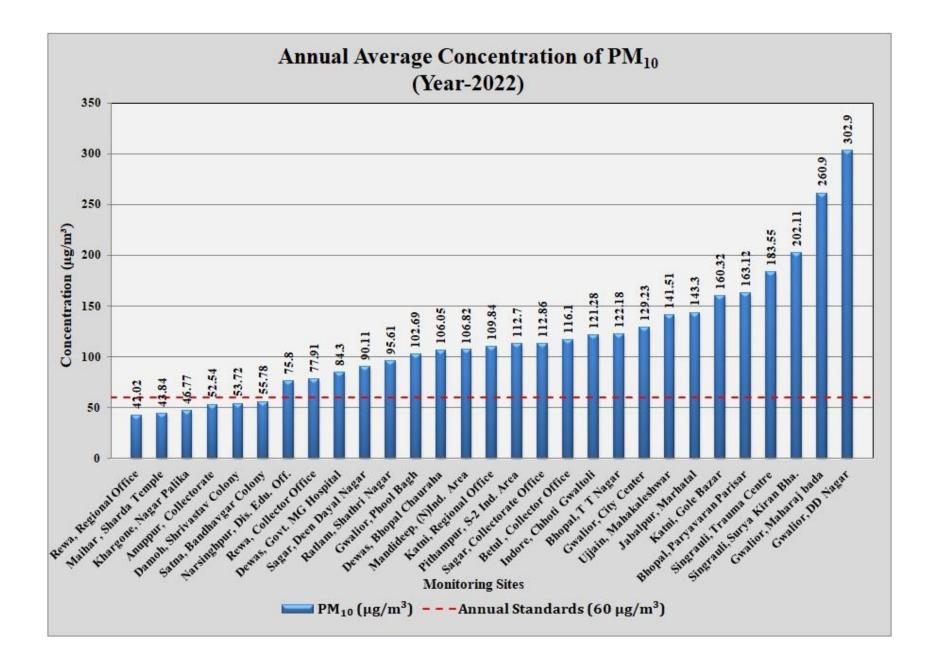
* Average Value is Shown for cities having >1 CAAQMS

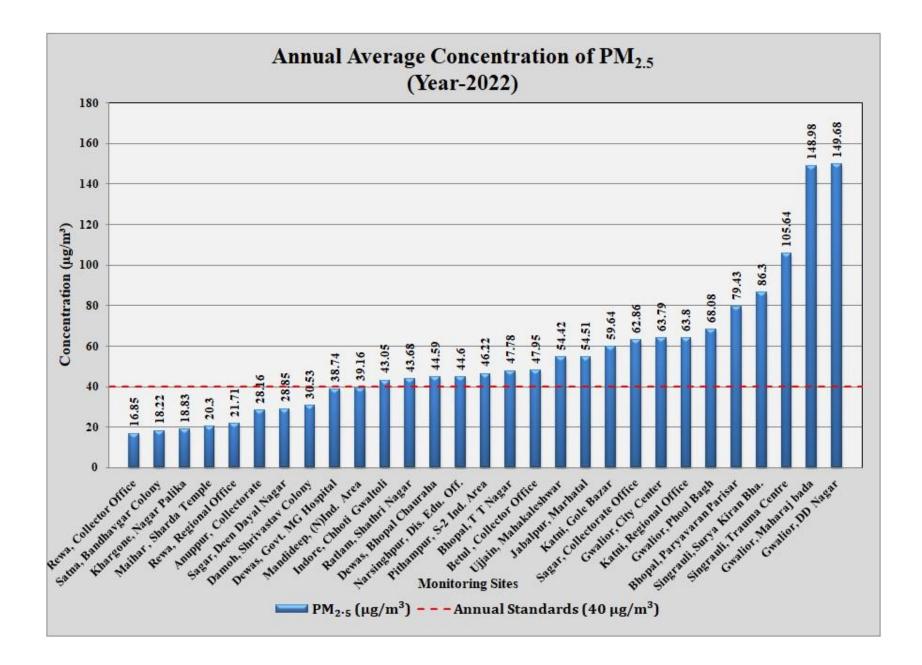


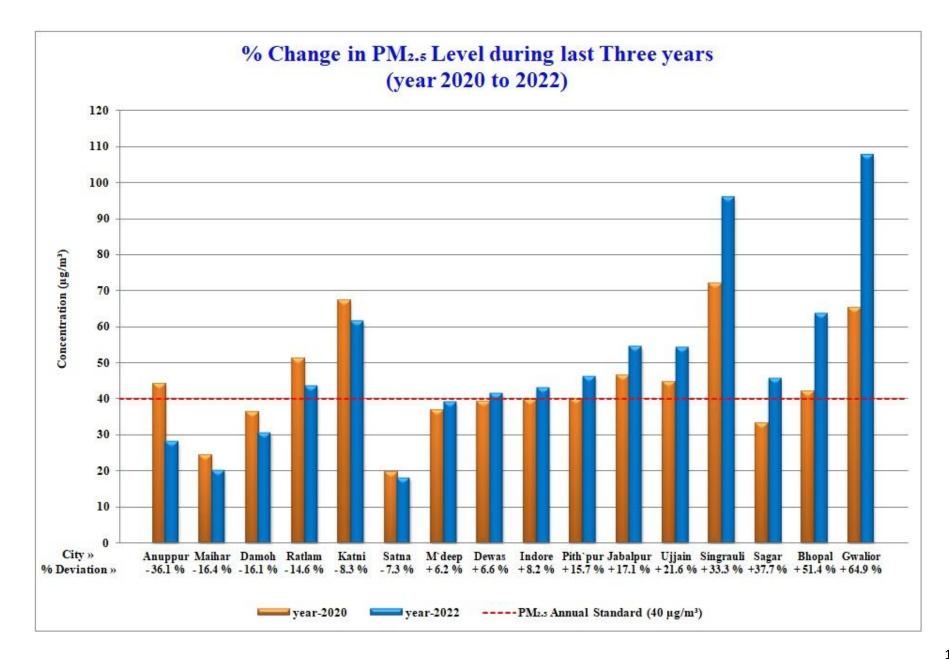


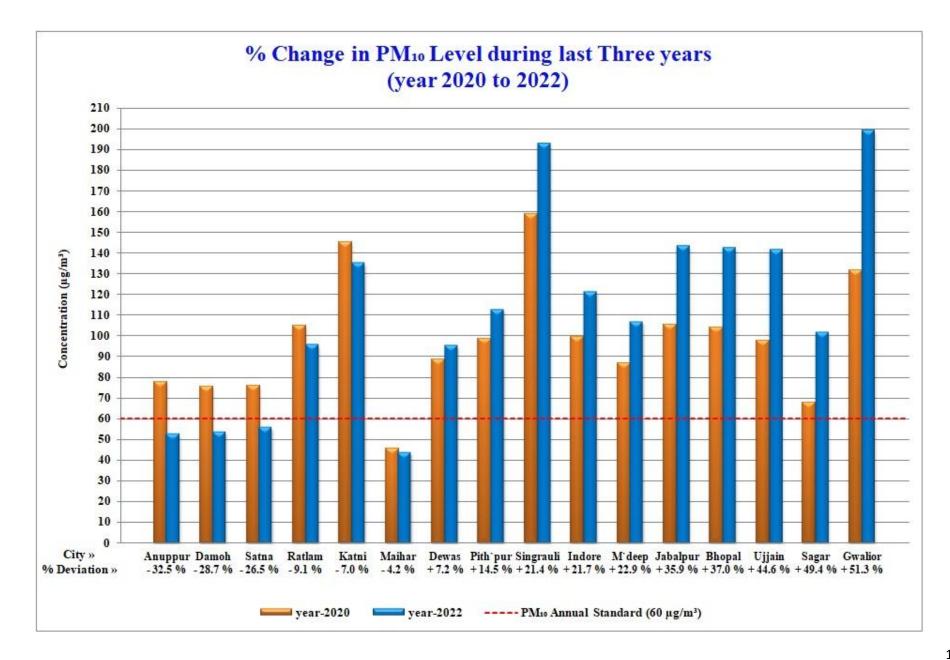


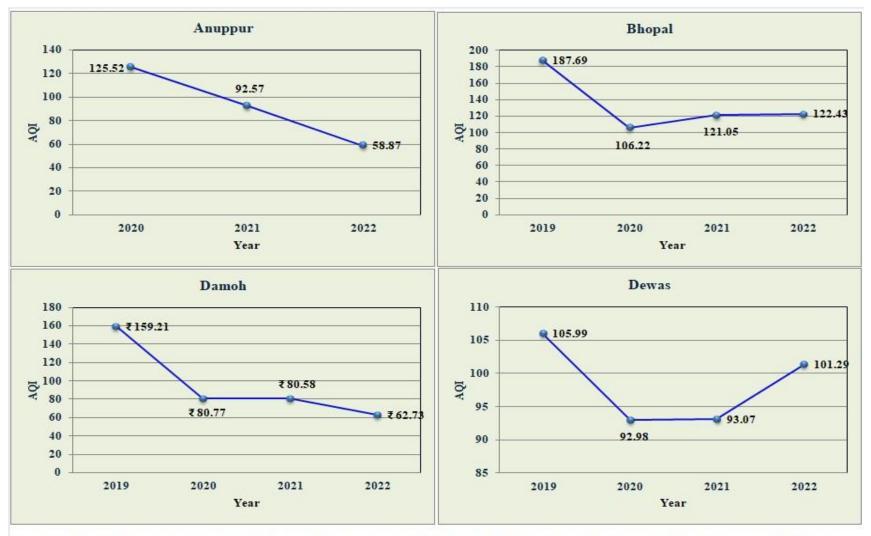






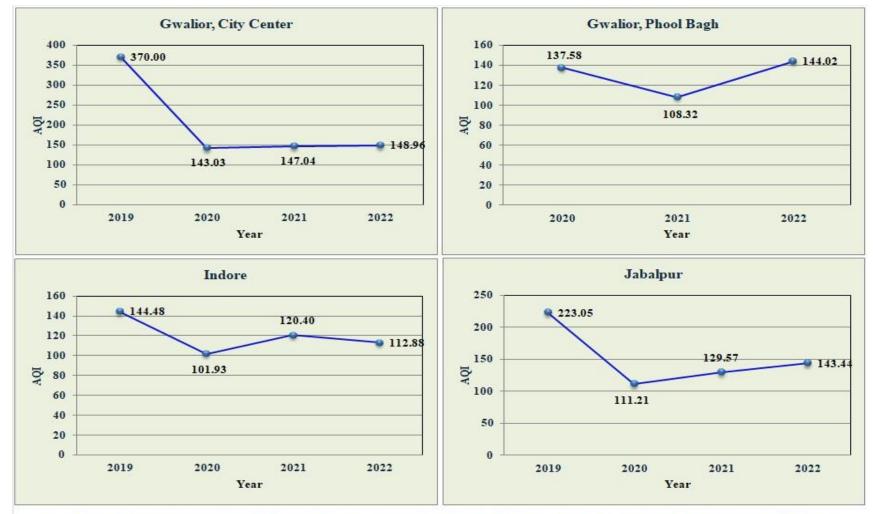




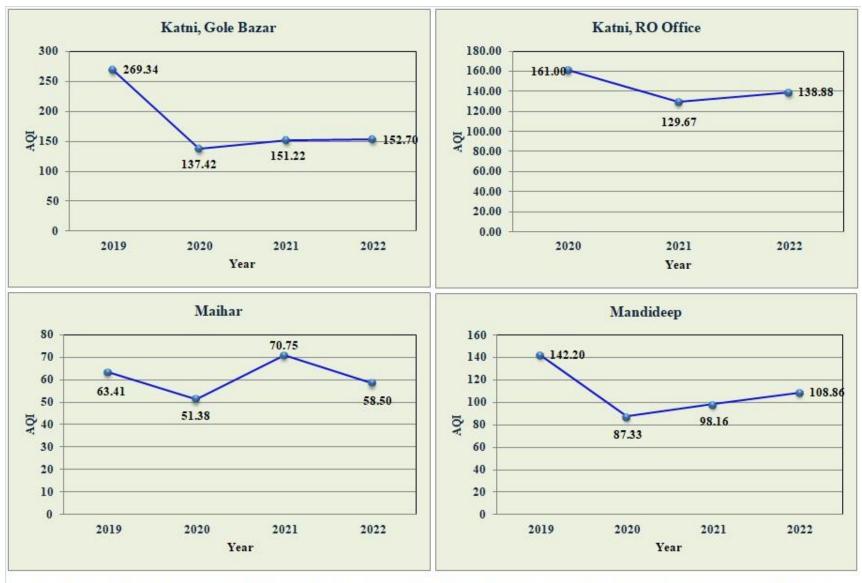


City-wise AQI comparative trend during 2019-2022

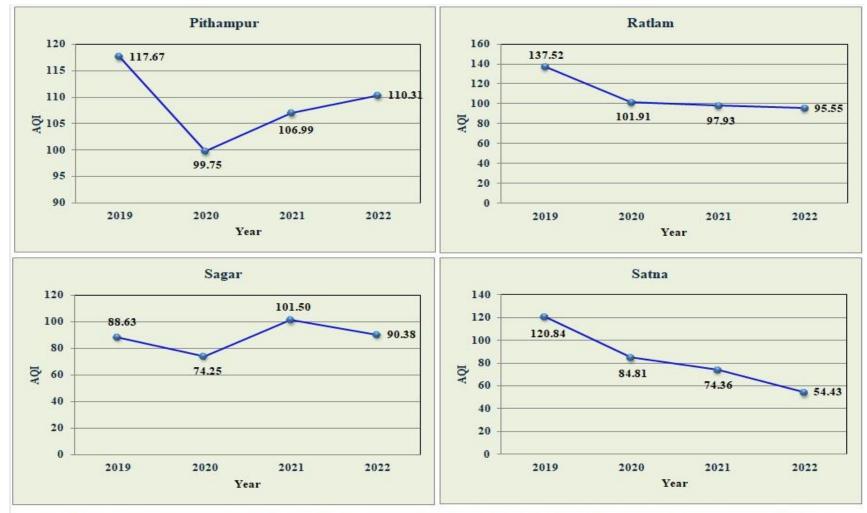
Good » (0-50) Satisfactory » (50-100) Moderate » (101-200) Poor » (201-300) Very Poor » (301-400) Severe » (401-500)



Good » (0-50) Satisfactory » (50-100) Moderate » (101-200) Poor » (201-300) Very Poor » (301-400) Severe » (401-500)



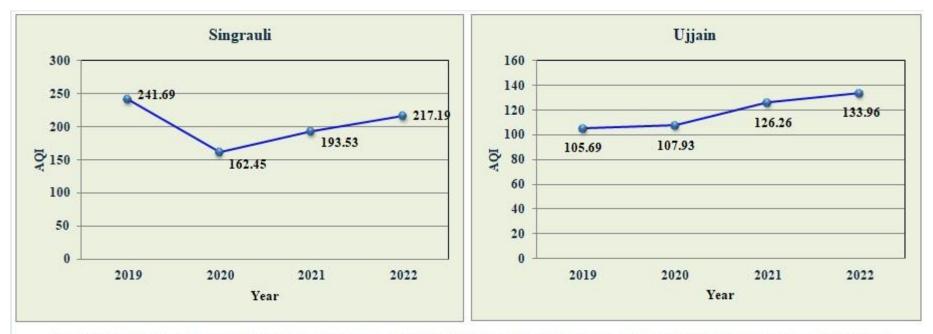
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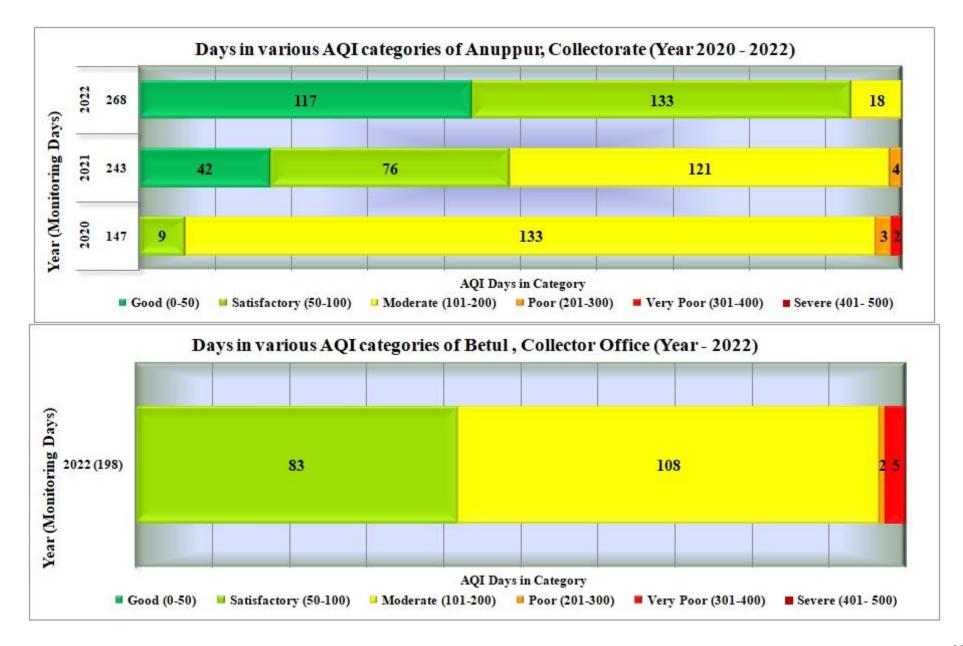
City-wise AQI comparative trend during 2019-2022

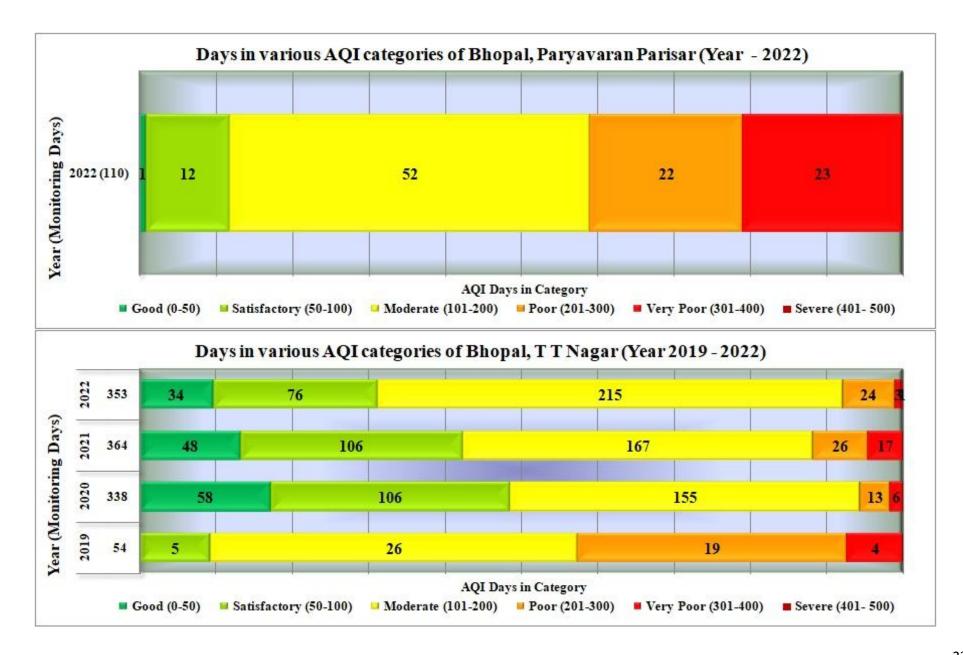
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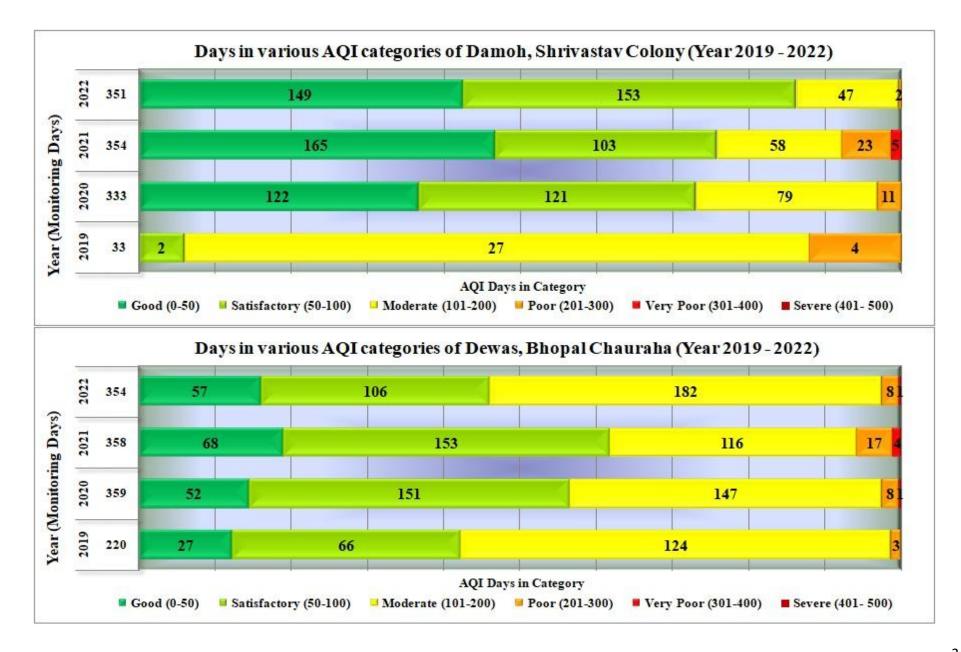


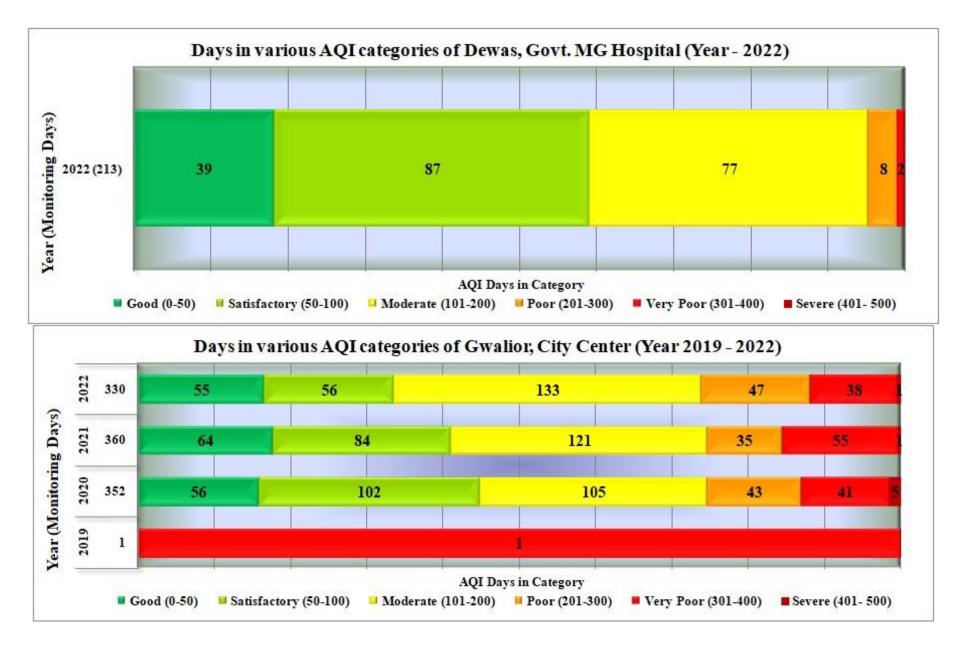


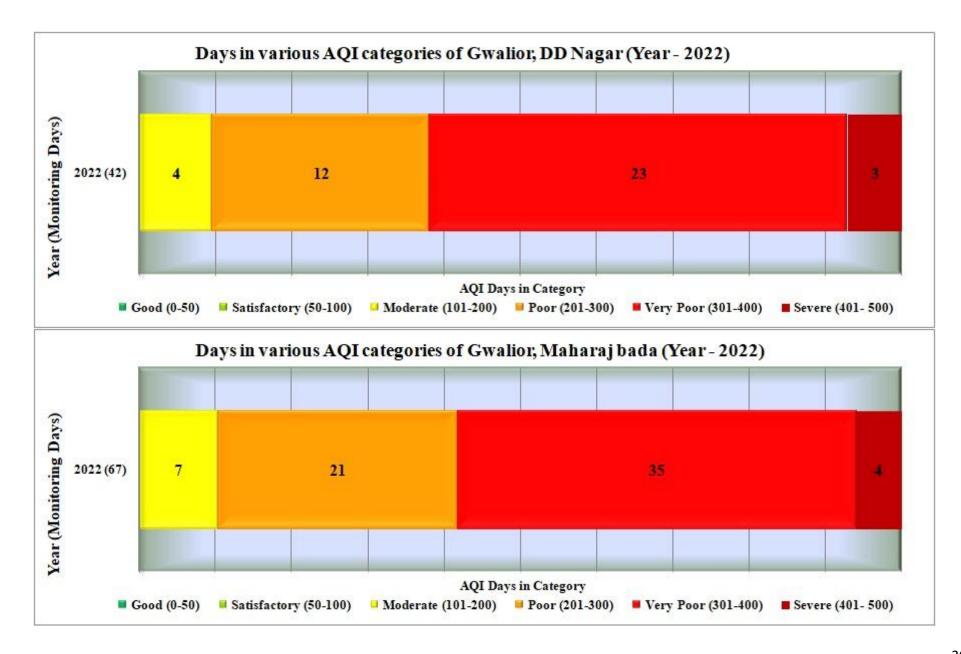
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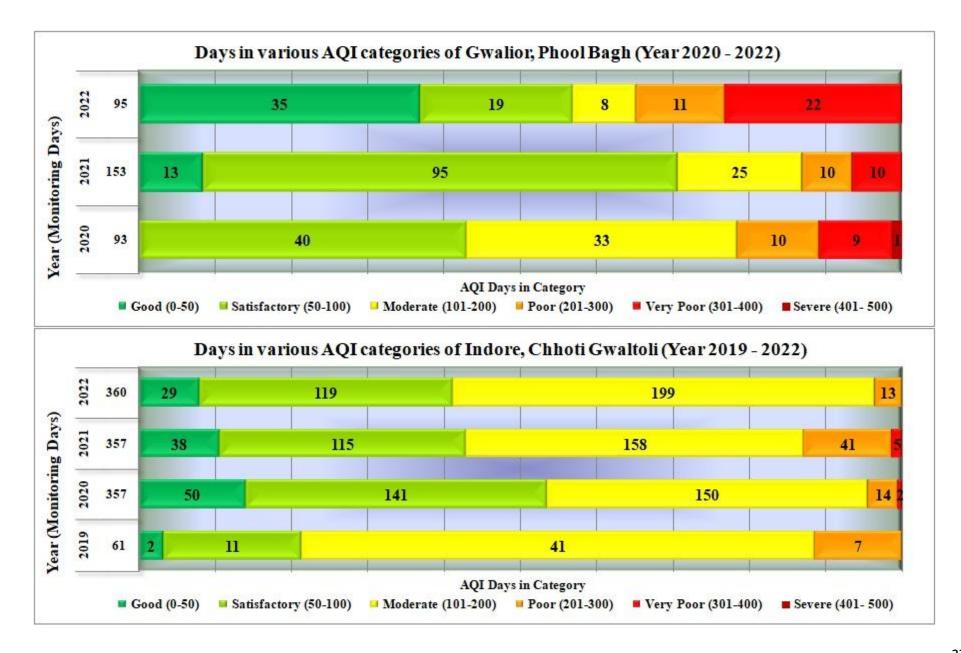


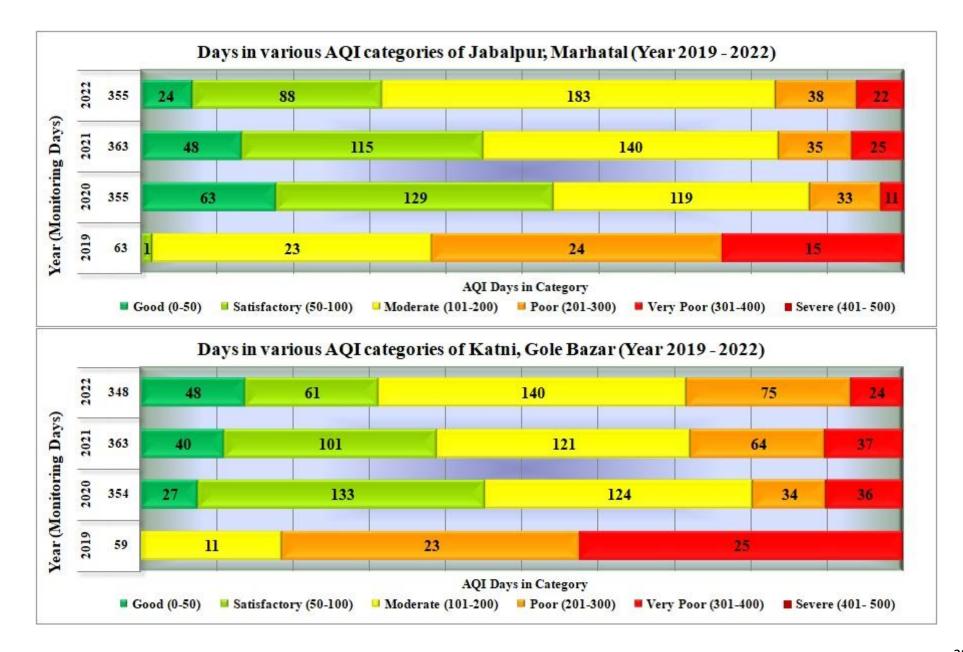


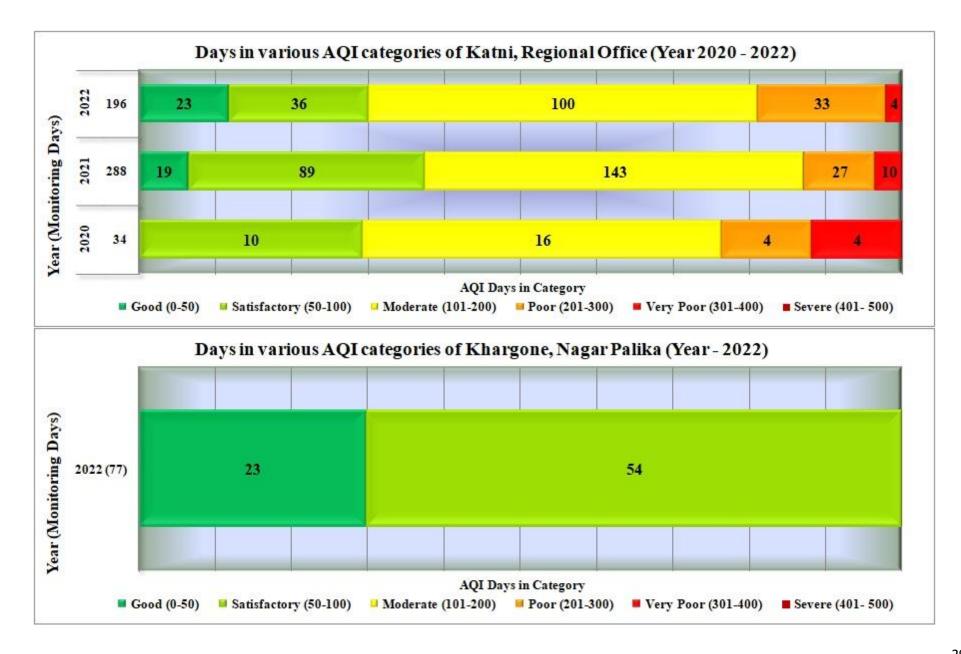


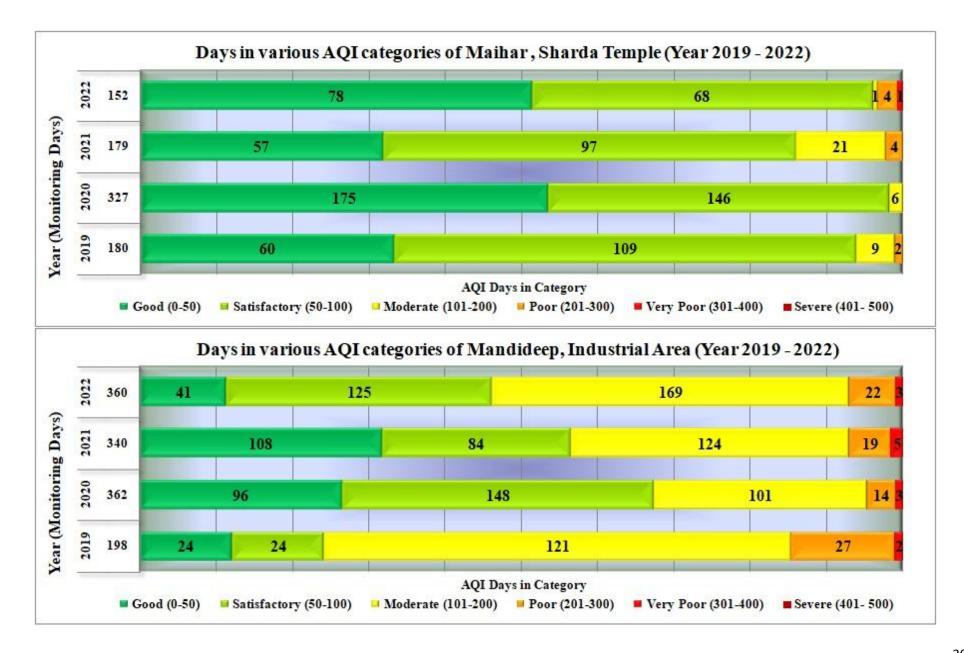


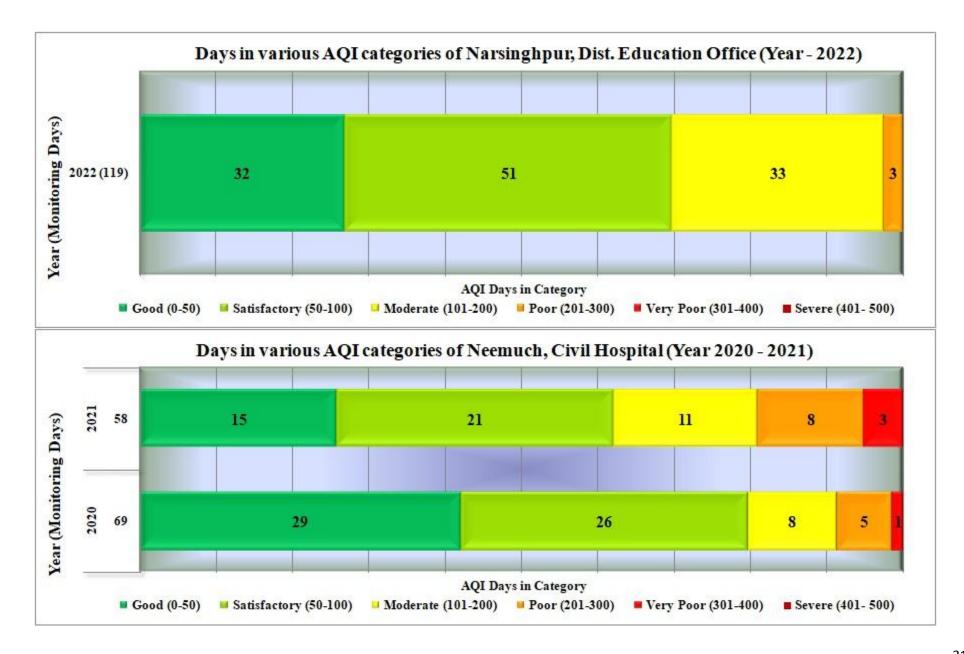


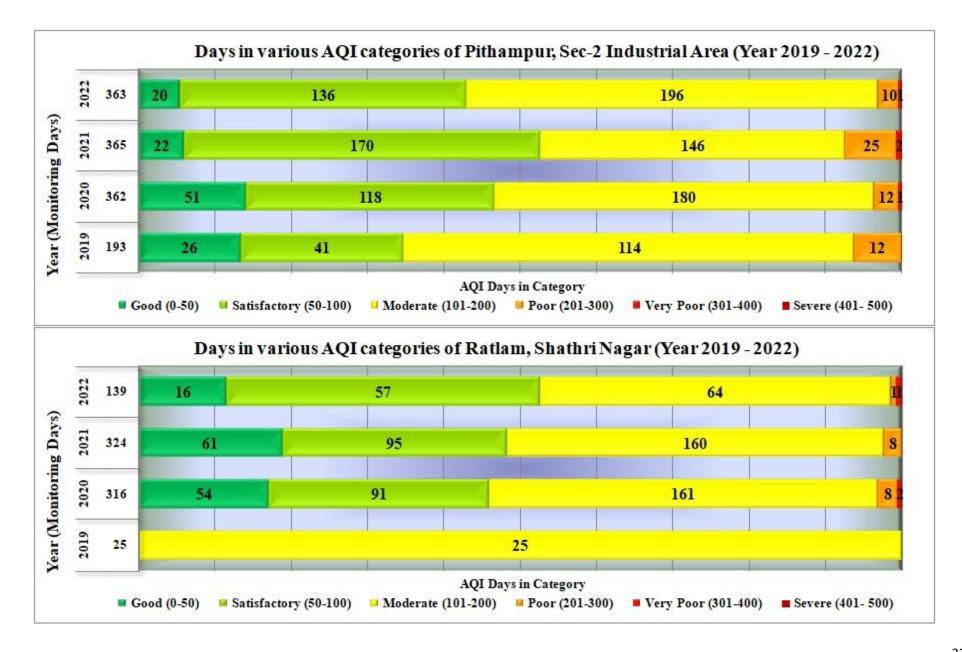


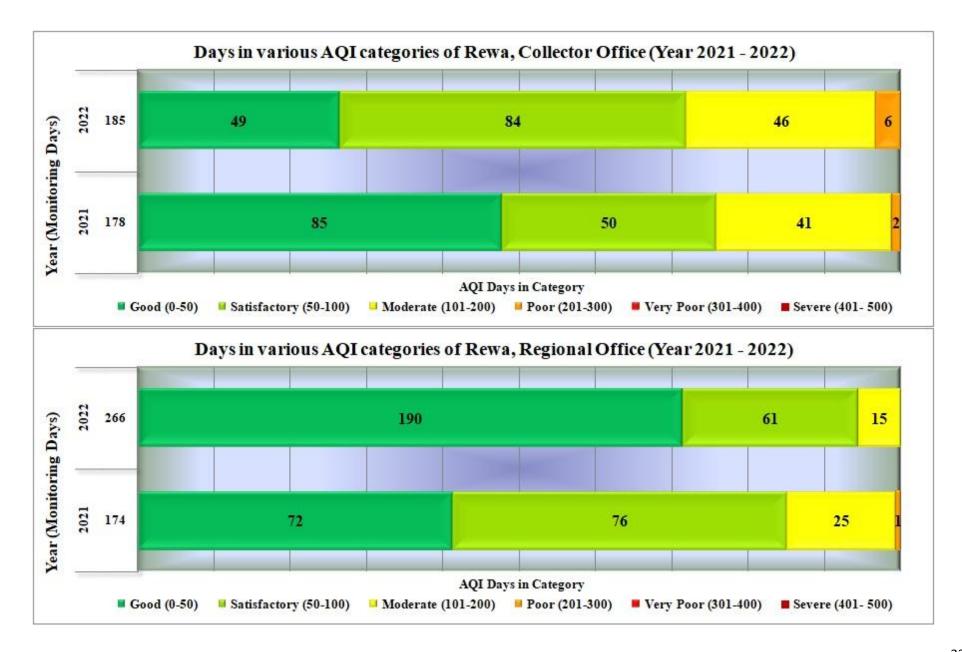


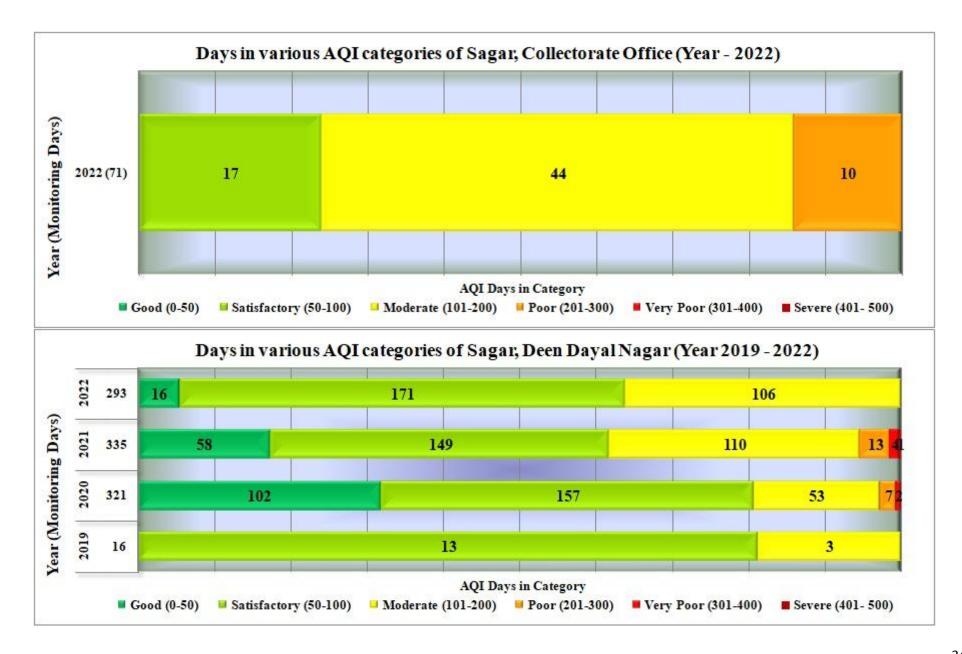


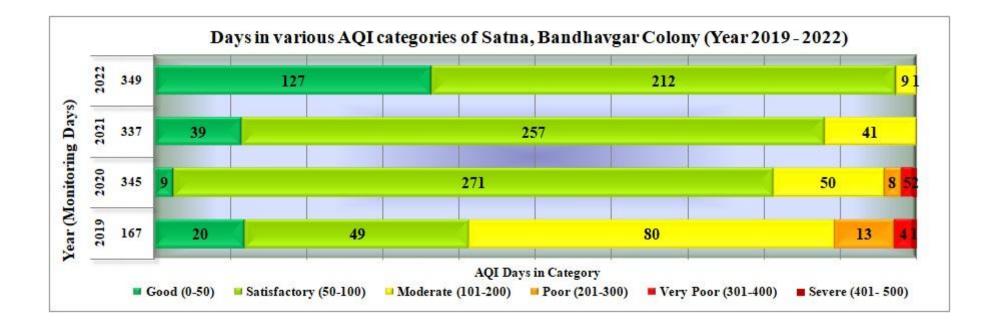


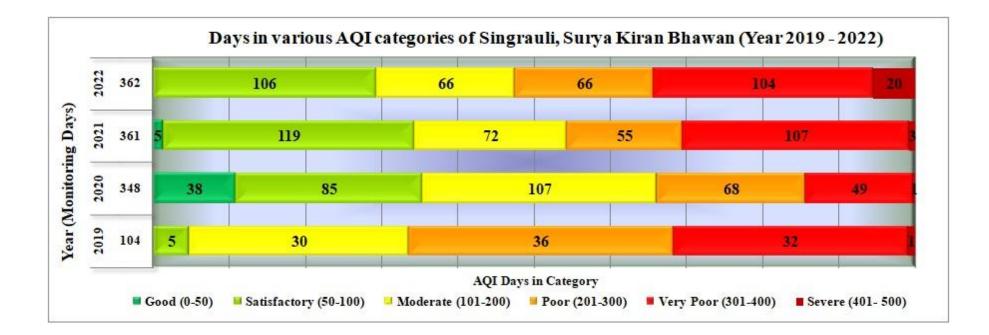


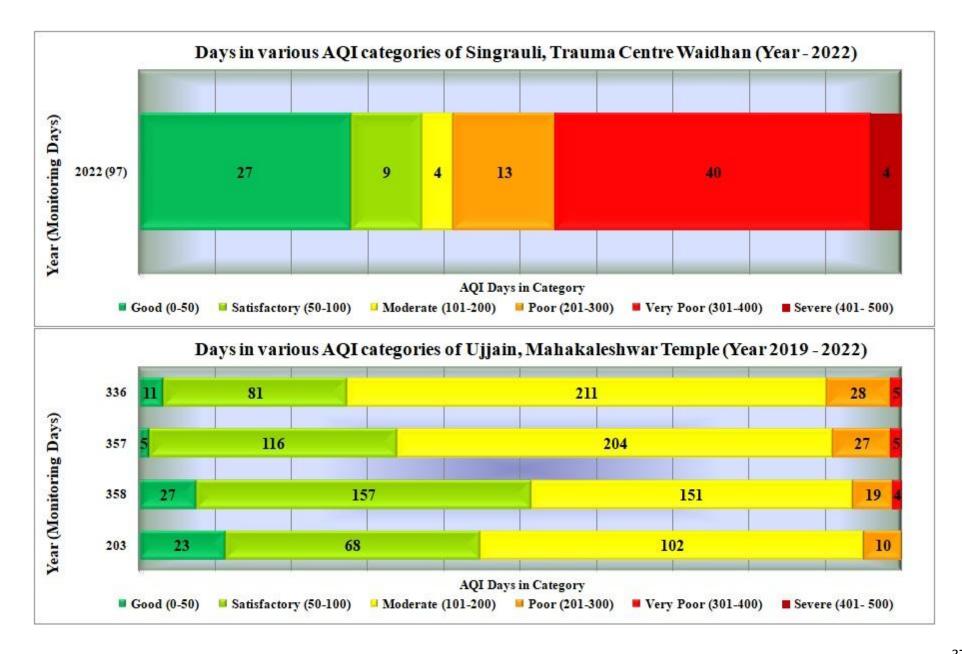












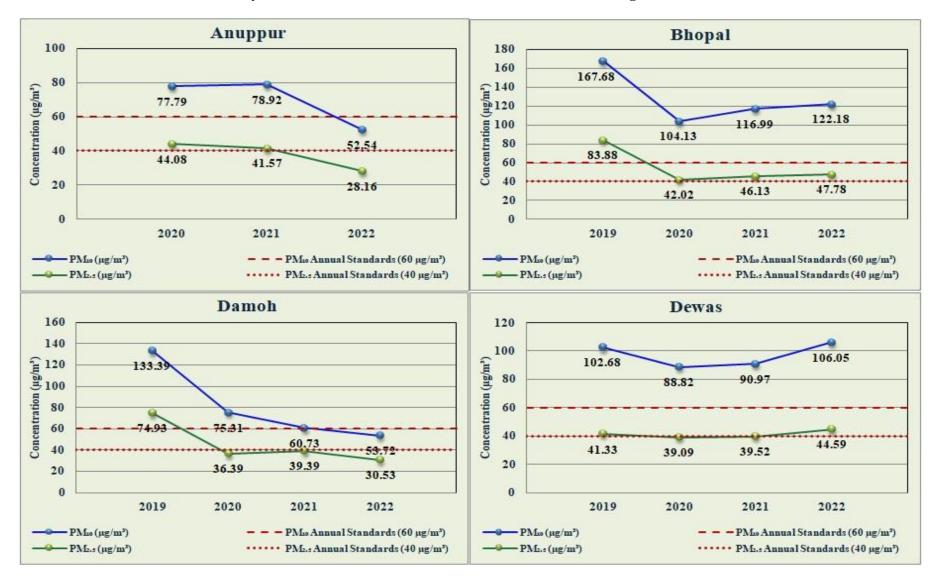
(Year 2019 - 2022)									
Sr No.	Station	Year	PM10 (µg/m3)	PM2.5 (μg/m3)	NOX (ppb)	CO (mg/m3)	SO2 (µg/m3)	NH3 (µg/m3)	Ozone (µg/m3)
		2019	102.68	41.33	14.6	0.5	9.04	19.72	60.61
1	Dewas, Bhopal Chauraha	2020	88.82	39.09	12.7	0.71	9.9	20.35	56.48
		2021	90.97	39.52	14	0.52	12.82	20.13	42.06
		2022	106.05	44.59	15.7	0.66	13.31	20.63	34.92
	Singrauli, Surya Kiran Bhawan Dudhichua	2019	234.69	93.11	37.6	0.91	50.26	20.18	45.5
2		2020	158.84	71.98	25	0.79	45.58	10.58	39.55
2		2021	179.4	87.95	41.4	1.15	34.19	40.88	27.79
		2022	202.11	86.3	68.1	1.01	29.85	41.21	34.9
		2019	96.43	39.55	8.22	0.81	5.89	24.35	70.99
2	Ujjain, Mahalvalaahuuar	2020	97.88	44.74	10.6	0.74	6.94	18.36	68.51
3	Mahakaleshwar Temple	2021	127.36	47.64	11.9	0.75	6.04	19.12	68.21
	Temple	2022	141.51	54.42	13.7	0.89	7.78	23.68	48.73
		2019	58.22	30.31	15.4	0.73	6.41	NA	NA
4	Maihar ,	2020	45.75	24.28	22.5	0.46	8.97	NA	NA
4	Sharda Temple	2021	54.02	33.95	18.8	0.94	10.78	NA	NA
		2022	43.84	20.3	17.6	1.34	9.82	NA	NA
	Mandideep, Sector New Industrial Area	2019	158.77	37.7	20	0.82	21.79	17.22	38.62
5		2020	86.89	36.89	20.9	0.72	15.33	17.59	31.88
5		2021	99.22	43.03	24.7	0.74	47.83	16.78	23.48
		2022	106.82	39.16	25.6	0.75	59.04	20.51	39.51
	Pithampur, Sector-2 Industrial Area	2019	117.34	41.46	6.98	0.42	11.07	13.81	17.45
6		2020	98.47	39.96	8.6	0.74	13.07	17.71	29.28
0		2021	95.62	50.14	19.2	0.67	21.03	18.07	61.14
		2022	112.7	46.22	8.88	0.71	16.47	15.53	41.39
	Satna, Bandhavgar Colony	2019	108.43	27	40.5	1.05	29.95	NA	NA
7		2020	75.85	19.65	27.7	0.29	10.36	NA	NA
/		2021	75.25	22.03	20.6	0.25	18.69	NA	NA
		2022	55.78	18.22	14.6	0.34	6.72	NA	22.17
	Bhopal, T T Nagar	2019	167.68	83.88	35.6	1.21	15.26	19.57	61.4
8		2020	104.13	42.02	17.2	0.83	15.55	15.54	57.41
		2021	116.99	46.13	18.4	0.89	22.33	12.46	65.07
		2022	122.18	47.78	13.6	1.03	20.43	11.02	58.33
9	Indore, Chhoti Gwaltoli	2019	137.3	66.45	54.7	1.13	8.9	24.78	40.69
		2020	99.65	39.78	37.4	0.76	9.99	16.87	48.87
		2021	117.58	48.45	38	1.07	14.21	18.26	47.83
		2022	121.28	43.05	46.4	1.07	15.26	22.63	45.43
10	Jabalpur, Marhatal	2019	180.94	97.42	36.9	1.3	10.71	22.32	40.02
10		2020	105.46	46.54	25.8	0.93	10.35	12.43	45.23

Annual Exceedance Report of Ambient Air Parameters (Year 2019 - 2022)

		2021	127.48	50.44	29.7	1.09	13.94	17.13	45.21
		2022	143.3	54.51	27	1.37	10.16	18.93	36.42
11		2019	209.26	116.12	31	1.1	13.86	24.5	51.49
	Katni, Gole	2020	128.47	57.37	23	0.83	13.41	30.34	43.43
	Bazar	2021	150.04	58.69	19.1	0.96	16.77	21.32	38.88
		2022	160.32	59.64	21.4	1.03	25.36	14.3	33.33
		2019	133.39	74.93	25.2	0.21	23.02	NA	NA
	Damoh, Shrivastav Colony	2020	75.31	36.39	25.3	0.31	18.31	NA	NA
12		2021	60.73	39.39	24.7	0.28	23.14	NA	NA
		2022	53.72	30.53	13.4	0.4	17.84	NA	NA
		2019	82.93	45.94	42.7	1.03	1.77	NA	NA
	Sagar, Deen	2020	67.91	33.31	19	0.69	3.34	NA	NA
13	Dayal Nagar	2021	105.48	36.31	19.7	0.42	8.42	NA	NA
		2022	90.11	28.85	13.1	1.03	7.91	NA	NA
		2019	153.24	62.25	48.4	NA	5.89	NA	NA
14	Ratlam, Shathri	2020	105.16	51.14	22.7	NA	14.88	NA	NA
14	Nagar	2021	100.58	44.52	24.3	NA	12.92	NA	NA
		2022	95.61	43.68	40.4	NA	18.65	NA	NA
	Gwalior, City Center	2019	269.17	218.57	34.3	0.28	36.51	40.92	61.4
15		2020	118.74	62.13	20.4	0.73	22.19	19.94	57.84
		2021	122.81	61.47	23.4	0.8	20.24	19.63	47.44
		2022	129.23	63.79	24.5	0.81	21.57	18.19	43.61
	Gwalior, Phool Bagh	2020	144.21	68.43	31.9	0.74	21.72	NA	NA
16		2021	81.96	51.31	65.8	0.85	6.96	NA	NA
		2022	102.69	68.08	5.44	0.68	14.66	NA	NA
17	Neemuch, Civil Hospital	2020	59.63	44.81	10.4	0.36	6.92	NA	NA
17		2021	71.61	52.45	8.56	0.31	5.74	NA	NA
	Anuppur, Collectorate	2020	77.79	44.08	13.1	3.18	16.95	NA	14.14
18		2021	78.92	41.57	11.9	1.85	15.66	NA	14.28
		2022	52.54	28.16	12.9	0.88	14.57	NA	14.57
	Katni, Regional Office	2020	162.07	77.24	46.8	1.11	9.43	NA	NA
19		2021	123.24	57.05	39.7	0.78	7.8	NA	NA
		2022	109.84	63.8	23.7	0.85	10.38	NA	NA
•	Rewa, Regional Office	2021	63.36	28.4	16.8	0.68	8.2	NA	NA
20		2022	42.02	21.71	20.5	NA	4.75	NA	NA
	Rewa, Collector Office	2021	64.09	18.91	22.1	0.6	9.59	NA	NA
21		2022	77.91	16.85	32.4	0.67	19.71	NA	NA
22	Betul , Collector Office	2022	116.1	47.95	7.51	1.1	67.77	7.79	NA
23	Dewas, Govt. MG Hospital	2022	84.3	38.74	21.5	NA	32.96	NA	NA

24	Khargone, Nagar Palika	2022	46.77	18.83	24	0.75	11.37	NA	NA
25	Singrauli, Trauma Centre Waidhan	2022	183.55	105.64	10.3	0.73	13.18	NA	NA
26	Narsinghpur, District Education Office	2022	75.8	44.6	25.7	0.97	10.45	NA	NA
27	Bhopal, Paryavaran Parisar	2022	163.12	79.43	26.1	1.2	6.35	18.91	28.33
28	Gwalior, Maharajbada	2022	260.9	148.98	32	1.47	33.74	37.85	56.42
29	Sagar, Collectorate Office	2022	112.86	62.86	12.2	0.89	6.19	11.08	98.13
30	Gwalior, DD Nagar	2022	302.9	149.68	45.6	1.61	13.71	32.92	72.11

* NA = Not Available



City-wise Annual Exceedance of Particulate Matters during 2019-2022

