GOVERNMENT OF INDIA MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

LOK SABHA UNSTARRED QUESTION No. 1190 TO BE ANSWERED ON 28.06.2019

Norms of Air Pollution

1190. SHRI PANKAJ CHAUDHARY

Will the Minister of ENVIRONMENT, FOREST AND CLIMATE CHANGE be pleased to state:

- (a) the prescribed norms of permissible particulate matter in the atmosphere and the names of such cities having high levels of air pollution beyond the prescribed norms;
- (b) whether the Government has identified the major factors responsible for air pollution and if so, the details thereof
- (c) whether the Government proposes to chalk out any concrete plan to check the factors responsible for air pollution; and
- (d) if so, the details thereof?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE (SHRI BABUL SUPRIYO)

- (a) The revised National Ambient Air Quality Standards (NAAQS) have been notified during 2009. The NAAQS is given in **Annexure I**. The ambient air quality data for metropolitan cities / million plus urban agglomerations during 2016- 2018 is given in **Annexure-II**. Analysis of data revealed that SO₂ levels were within the National Ambient Air Quality Standards (NAAQS) in all 50 cities during 2016-18. With respect to NO₂, 17 cities showed an increasing trend, 16 cities showed a decreasing concentration, 16 cities showed a fluctuating trend and 1 city revealed steady concentration. With respect to PM_{2.5}, trends are available for 17 cities and out of which, 08 cities showed an increasing trend, 04 cities showed a decreasing concentration, 16 cities showed a decreasing concentration, 17 cities showed an increasing trend, 14 cities showed a fluctuating trend. With respect to PM₁₀, 14 cities showed an increasing trend, 14 cities showed a decreasing concentration, 22 cities showed a fluctuating trend.
- (b) Studies have been conducted to identify major air pollution sources and their contributions to ambient air pollution levels in different cities of the country. The major sources contributing to particulate matter are vehicles, biomass/garbage burning, road dust suspension, construction, industries, etc. Source contributions identified in different source apportionment studies are enclosed as **Annexure III**.

(c) & (d) The Central Government has taken a number of regulatory measures for prevention, control and abatement of air pollution in the country.

Action Plans for Improvement of Air Quality in Delhi NCR:

- (i) Graded Response Action Plan (GRAP) was notified on January 12, 2017, for prevention, control and abatement of air pollution in Delhi and NCR. It identifies graded measures and implementing agencies for response to four AQI categories, namely, Moderate to Poor, Very Poor, Severe and Severe + or Emergency.
- (ii) The Central Government has notified a Comprehensive Action Plan (CAP) in 2018 identifying timelines and implementing agencies for actions identified for prevention, control and mitigation of air pollution in Delhi and NCR.

Action Plans for Improvement of Air Quality of Other Cities:

(i) Ministry of Environment, Forest and Climate Change has launched National Clean Air Programme (NCAP) in January 2019 to tackle the problem of air pollution in a comprehensive manner with targets to achieve 20 to 30 % reduction in PM10 and PM2.5 concentrations by 2024. This is keeping 2017 as the base year for the comparison of concentration. The overall objective is to augment and evolve effective ambient air quality monitoring network across the country besides ensuring comprehensive management plan

for prevention, control and abatement of air pollution and enhancing public awareness and capacity building measures.

(ii) 102 non-attainment cities have been identified based on ambient air quality data for the period 2011 - 2015 and WHO report 2014/2018. A total of 86 city specific action plans have been approved for ground implementation.

The Central Government has taken several measures for prevention, control and abatement of air pollution across the country. These include-

Monitoring

- Setting up of monitoring network for assessment of ambient air quality. Central Presently, ambient air quality is being monitored at 779 locations covering 339 cities in 29 states & 6 Union Territories across the country under National Air Quality Monitoring Programme (NAMP). Further, real time monitoring is taking place at 170 locations in 102 cities in 18 States/UTs.
- Notification of National Ambient Air Quality Standards.
- Launch of National Air Quality Index.
- Implementation of Air Quality Early Warning System for Delhi in October, 2018 in association with Ministry of Earth Sciences (MoES).

Transport

- Leapfrogging from BS-IV to BS-VI fuel standards since 1st April, 2018 in NCT of Delhi and from by 1st April, 2020 in the rest of the country.
- Introduction of cleaner / alternate fuels like gaseous fuel (CNG, LPG etc.), ethanol blending.
- Promotion of public transport and improvements in roads and building of more bridges to ease congestion on roads.
- Operationalisation of Eastern Peripheral Expressway & Western Peripheral Expressway to divert non-destined traffic from Delhi.
- Streamlining the issuance of Pollution Under Control Certificate.

• Environment Protection Charges (EPC) have been imposed on diesel vehicles with engine capacity of 2000cc and above in Delhi NCR.

Industry

- Badarpur thermal power plant has been closed from 15th October, 2018.
- Notification of stricter emission norms for power plants.
- All brick kilns have been shifted to zig-zag technology in Delhi and NCR.
- Installation of on-line continuous (24x7) monitoring devices all red category industries in Delhi and NCR.
- Revision of emission standards for industrial sectors from time to time.
- Ban on pet coke and furnace oil monitoring of use of pet coke in Lime Kilns/Cement Kilns and Calcium Carbide Industry in Delhi and NCR States.

Biomass and Solid Waste

- A new Central Sector Scheme on 'Promotion of Agricultural Mechanization for in-situ management of Crop Residue in the States of Punjab, Haryana, Uttar Pradesh and NCT of Delhi' for the period from 2018-19 and 2019-20 has been launched.
- Banning of burning of biomass/garbage.
- 3 Waste-to-Energy (W-t-E) plants are currently operational in Delhi with atotal capacity of 5100 Tonnes Per Day (TPD).
- Notifications of 6 waste management rules covering solid waste, plastic waste, e-waste, biomedical waste, C&D waste and hazardous wastes issued in 2016.

Dust

- Notifications regarding dust mitigation measures for construction and demolition activities.
- Number of mechanised road sweeping machines has been increased significantly and presently 60 machines are deployed for cleaning of roads in Delhi.

Public Outreach

- Ministry of Environment, Forest & Climate Change and Delhi Government launched Clean Air for Delhi Campaign from 10th – 23rd Feb 2018 and to check air polluting activities pre and post Diwali, a special campaign called "Clean Air Campaign" during November 01, 2018 to November 10, 2018.
- Ministry is promoting peoples participation and awareness building among citizens for environmental conservation through Green Goods Deeds that focus on promotion of cycling, saving water and electricity, growing trees, proper maintenance of vehicles, following of lane discipline and reducing congestion on roads by car pooling etc.
- Development of mechanism for redressal of public complaints regarding air pollution issues in Delhi and NCR (through 'Sameer App', 'Emails'(aircomplaints.cpcb@gov.in) and 'Social Media Networks' (Facebook and Twitter) etc.

Annexure-I

Revised National Ambient Air Quality Standards (NAAQS)

[NAAQS Notification dated 18th November, 2009]

			Concentratio	n in Ambient Air	
	Pollutants		Industrial,	Ecologically	Methods of Measurement
S.		Time	Residential,	Sensitive Area	
No		Weighted	Rural and	(notified by	
110.		Average	other Areas	Central	
		4 1.44		Government)	
1	Sulphur Dioxide	Annual*	50	20	1. Improved West and Gaeke
	$(SO_2), \mu g/m^2$	24 Hours**	80	80	2. Ultraviolet Fluorescence
2	Nitrogen Dioxide	Annual*	40	30	1. Modified Jacob&Hochheiser
	$(NO_2), \mu g/m^3$	24 Hours**	80	80	2. Chemiluminescence
3	Particulate Matter	Annual*	60	60	1. Gravimetric
	(Size $<10\mu$ m) or PM ₁₀ µg/m ³	24 Hours**	100	100	2. TEOM
					3. Beta attenuation
4	Particulate Matter	Annual*	40	40	1. Gravimetric
	(Size <2.5 μ m) or PM _{2.5} μ g/m ³	24 Hours **	60	60	2. TEOM
					3. Beta attenuation
5	Ozone (O ₃), μ g/m ³	8 hours**	100	100	1. UV photometric
		1 hours **	180	180	2. Chemiluminescence
			0.50	0.50	3. Chemical Method
6	Lead (Pb), $\mu g/m^3$	Annual *	0.50	0.50	1. AAS/ICP Method after sampling
		24 Hour**	1.0	1.0	using EPM 2000 or equivalent filter paper
		0.11	0.2		2. ED-XRF using Tetlon filter
7	Carbon Monoxide (CO), mg/m ³	8 Hours **	02	02	Non dispersive Infra Red (NDIR)
		1 Hour**	04	04	Spectroscopy
8	Ammonia (NH ₃), μ g/m ³	Annual*	100	100	1. Chemiluminescence
		24 Hour**	400	400	2. Indophernol blue method
9	Benzene (C_6H_6), $\mu g/m^3$	Annual *	05	05	1. Gas chromatography based
					continuous analyzer
					2. Adsorption and Desorption followed
					by GC analysis
10	Benzo(a)Pyrene (BaP)-	Annual*	01	01	Solvent extraction followed by
	particulate phase only, ng/m ³				HPLC/GC analysis
11	Arsenic (As), ng/m ³	Annual*	06	06	AAS/ICP method after sampling on EPM
	· · -				2000 or equivalent filter paper
12	Nickel (Ni), ng/m ³	Annual*	20	20	AAS/ICP method after sampling on EPM
					2000 or equivalent filter paper

* Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform interval.** 24 hourly 08 hourly or 01 hourly monitored values, as applicable shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

NOTE: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

Annexure II

Air quality status of million plus/ urban agglomerations cities for 2016, 2017 and 2018 under NAMP (Manual)

SI		SI		2016			2017				2018				
.N 0	State	.N 0	City	SO 2	N O ₂	PM 10	PM 2.5	SO 2	N O ₂	PM 10	PM 2.5	SO 2	N O ₂	PM 10	PM 2.5
	Andhra Dradaah	1.	Vijaywada	6	44	102	-	6	29	99	-	5	21	77	29
1.	Pradesh	2.	Vishakhap atnam	8	18	77	-	9	17	73	-	10	20	77	49
2.	Bihar	3.	Patna	4	32	212	-	5	39	156	-	5	51	207	
3.	Chandi garh	4.	Chandigar h	2	21	105	123	2	16	109	64	2	17	102	50
4.	Chattis garh	5.	Durg- Bhillainag ar	9	23	108	-	8	21	97	-	8	19	84	-
		6.	Raipur	12	31	148		10	27	103		14	20	65	
5.	Delhi	7.	Delhi	7	66	278	118	7	68	241	106	6	73	223	121
		8.	Ahmedaba d	14	27	108	34	14	29	120	38	16	29	236	73
6.	Gujarai	9.	Rajkot	13	21	92	32	16	22	106	37	19	23	203	64
		10.	Surat	13	22	92	31	16	26	106	36	22	29	176	57
		11.	Vadodara	14	23	92	30	16	23	108	36	20	25	188	60
7.	Haryan a	12.	Faridabad	-	-	-	-	-	-	-	-	-	-	-	-
8.	Jammu & Kashmi r	13.	Srinagar	-	-	-	-	-	-	-	-	-	-	153	-
9.	Jharkha	14.	Dhanbad	15	37	226	-	15	37	238	-	14	37	264	-

(Annual average in µg/m³)

	nd	15.	Jamshedp ur	36	45	136	_	36	45	131	-	37	46	128	-
		16.	Ranchi	20	37	196	-	19	37	142	-	18	36	122	-
10.	Karnata ka	17.	Bangalore	3	31	103	51	2	31	92	46	2	30	90	47
		18.	Kochi	2	20	48	-	2	19	51	-	3	16	57	-
		19.	Kollam	4	8	46	-	3	6	43	-	3	5	47	-
	Kerala	20.	Kozhikod e	2	18	51	-	2	18	47	-	2	10	54	6
11.		21.	Malapura m	2	17	37	-	2	21	32	-	2	26	31	-
		22.	Thiruvana nthapuram	10	25	53	-	10	26	49	-	9	24	49	-
		23.	Thissur	2	5	54	-	2	5	56	-	3	9	41	-
	Madhy	24.	Bhopal	3	15	89	27	4	15	93	41	7	14	135	59
12	a Pradesh	25.	Gwalior	10	14	96	52	10	17	110	47	13	21	134	62
12.	Tracesii	26.	Indore	11	20	95	54	11	21	80	43	10	19	88	41
		27.	Jabalpur	10	23	71	32	10	21	74	23	7	17	119	43
		28.	Aurangab ad	14	39	92	-	10	33	83	-	13	35	70	-
		29.	Mumbai	6	30	119	-	3	18	151	40	2	21	166	46
	Mahara	30.	Nagpur	16	26	118	-	9	27	102	-	10	28	103	44
13.	shtra	31.	Nashik	13	27	85	-	12	22	81	-	12	21	85	-
		32.	Pune	28	78	107	-	21	65	102	-	37	75	106	-
		33.	Thane	18	60	122	-	18	47	125	-	17	44	108	-
		34.	Vasai- virar	N A	N A	NA	NA	N A	N A	NA	NA	N A	N A	NA	NA
	Punjab	35.	Amritsar	12	29	194	-	11	27	168	-	13	34	177	-
14.		36.	Ludhiana	11	25	139	-	10	28	162	-	9	32	162	-

	Rajasth	37.	Jaipur	8	33	199	-	8	30	177	-	8	32	165	-
15.	an	38.	Jodhpur	6	23	168	-	6	21	180	-	7	24	223	-
		39.	Kota	7	30	109	-	8	28	130	-	7	28	152	-
		40.	Chennai	10	18	65	25	9	17	62	32	9	16	78	34
16.	Tamiln adu	41.	Coimbator e	6	24	59	35	5	26	49	34	6	23	54	32
		42.	Madurai	15	24	76	38	14	23	67	30	12	20	84	34
		43.	Trichy	12	20	95	27	12	20	86		17	23	110	53
17.	Telanga na	44.	Hyderaba d	5	27	101	49	6	28	108	54	5	30	105	55
		45.	Agra	5	22	198	-	4	19	185	124	4	22	209	106
		46.	Allahabad	4	37	196	-	4	40	140	-	4	45	231	-
	Uttar	47.	Ghaziabad	15	28	235	-	22	34	280	-	21	43	245	103
18.	Pradesh	48.	Kanpur	7	39	217	-	7	45	224	-	7	47	218	-
		49.	Lucknow	8	27	214	-	8	26	246	102	7	30	217	108
		50.	Meerut	7	55	157	-	7	52	153	-	7	58	177	-
		51.	Varanasi	11	32	256	-	10	38	244	-	9	34	189	-
19	West	52.	Asansol	13	42	211	88	12	37	163	67	13	35	146	58
19.	Bengal	53.	Kolkata	4	49	113	70	6	41	120	71	6	44	148	86

NB. NA- no monitoring station in the city, '-' data not available, National Ambient Air Quality Standard (NAAQS) for Residential, Industrial, Rural and others Areas (Annual average) for SO₂ = 50 μ g/m³, NO₂ = 40 μ g/m³, PM₁₀ = 60 μ g/m³ & PM_{2.5} = 40 μ g/m³ and SO₂ = 20 μ g/m³, NO₂ = 30 μ g/m³, PM₁₀ = 60 μ g/m³ and PM_{2.5} = 40 μ g/m³ for Ecologically sensitive area. The data furnished in the table for year 2018 is as available on date.

Annexure III

Source Apportionment studies:

TERI ARAI Study (Aug 2018)-Delhi									
Source	% contribut	ion (PM ₁₀)	% contribution (PM, ₅)						
	Winter	Summer	Winter	Summer					
Residential	9%	8%	10%	8%					
Agri. Burning	4%	7%	4%	7%					
Industry	27%	22%	30%	22%					
Dust (soil, road, and	25%	42%	17%	38%					
const.)									
Transport	24%	15%	28%	17%					
Others	10%	7%	11%	8%					
CPCB Study (2010) Bang	galore								
Source	% contribu	ition (PM ₁₀)	% coi	ntribution (PM _{2.5})					
Road Dust	45.6	- 55.6		2.6 - 4.4					
Secondary	2.4 -	11.1		11 - 13.6					
Transport	10.9	- 22.6		35.1 - 60.6					
DG Sets	7.5 -	18.2		17.2 - 28.1					
Domestic	2.8	- 6.4	2.4 - 11.1						
Industries	27	7.2							
CPCB Study (2010) Chennai									
Source	% contribu	tion (PM ₁₀)	% coi	ntribution (PM _{2.5})					
Road Dust	6.3	- 27		22.8 - 27.9					
Kerosene	2.9	- 6.8		-					
Coal	4.2	- 7.1		18.2 - 26.6					
Bakeries	3.5	- 5.4		-					
Transport	35.1	- 48.3		19.6 - 45.7					
DG Set	13.8	- 15.6		8 - 8.4					
Domestic	3.9 -	20.5	13.7 - 28.3						
CPCB Study (2010) Kanj	our								
Source	% contribu	tion (PM ₁₀)	% coi	ntribution (PM _{2.5})					
Road Dust	7.2	- 9.4	4.9 - 7.7						
Garbage burning	17.7	- 30.2	-						
Secondary	15.6	- 18.7	21.2 - 24.3						
Industries	2.3 -	18.9	1.9 - 16.8						
Transport	14.7	- 16.8	23.6 - 31.9						
DG Set	5.2	- 8.5	7 - 17.6						
Domestic	15.1	- 25.8	21.5 - 27.7						
CPCB Study (2010) Pune									
Source	% contribu	tion (PM ₁₀)	% contribution (PM _{2.5})						
Road Dust	49.2	- 64.5		3.1 - 4.7					
Trash burning	2.9	- 8.6	-						

Construction	6.5 - 27.9	7.9 -							
Transport	2 - 9.8	8 20.9 - 33.9							
DG Set	3.3 - 4.2	-							
Domestic	8.3 - 13.2	14.3 - 16.8							
Secondary	-	43.2 - 57.9							
Ohers	-	14.3							
CPCB Study (2010) Mumbai									
Source		% contribution (PM ₁₀)							
Soil		28.6 - 46.8							
Marine		1.7 - 6							
Wood combustion		8.4 - 15.8							
Fuel combustion		6.4							
LPG combustion		2.5 - 18.1							
Transport		7.8 - 26							
Coal combustion		4.2							
SIA		10.1 - 21.3							
Petroleum refinery		5.1							
Biomass burning		23							