## Radhasoami Dayal Ki Daya Radhasoami Sahai

# AIR QUALITY MONITORING @ 40 FEET HEIGHT – Report Date: 30.5.2022 (BASED ON WHO GUIDELINES - 2021)

Permissible Limits (24 Hour Mean):  $PM_{10} = 45$ ;  $PM_{2.5} = 15$ , all units are in  $\mu g/m^3$ 

	Data		(T	Data	SANJAY PLACE (ARITHMETIC MEAN DATA)															
	Today: May 30 – 29 Yesterday May 29 – 28	Concentration (µg/m <sup>3</sup> )			Me	eteorolog	ical Par	ameter	5		Today: May 30 – 29	Concentration (µg/m³)		Meteorological Parameters						
		PM2.5	PM10	RH %	WS m/s	WD	T Max	°C Min	SR W/m <sup>2</sup>	RF mm	<b>Yesterday</b> May 29 – 28	PM2.5	<b>PM</b> 10	RH %	WS m/s	WD	T Max	°C Min	SR W/m <sup>2</sup>	RF mm
4 / 97	Today	20↓	93↑	62	3.1	SSE	44.3	28.4	134	18.5	Today	54↓	234↑	56	2.1	SE		29.2		17
	Yesterday	14	111	43	4.0	NE	43.7	31.9	162	0							44.8		166	
3 / 34	Today	28↓	61↑	60	3.0	SSE	42.7	28.1	148	18.5										
	Yesterday	15	59	44	4.0	NE	43.1	32.0	178	0										
Science Faculty	Today	23↓	58	64	3.2	SSE	42.0	27.3	138	18.5	Yesterday	51	296	40	2.6	Ν	45	34	207	0
	Yesterday	13	57	44	4.0	NE	43.6	31.8	172	0										

#### Within WHO 2021 Limits

**Beyond WHO 2021 Limits** 

**Views of AQI Research Group:** In comparison to yesterday, PM<sub>2.5</sub> has increased at all locations of Dayalbagh. PM<sub>10</sub> has decreased at Vidyut Nagar while at Prem Nagar and Science Faculty there is marginal variation. The decrease in PM<sub>10</sub> concentrations might be due to the wash-out effect of rain (18.5 mm in the evening). However, as Relative Humidity has increased, atmospheric chemical reactions (gas-to-particle conversion, coagulation of particles) might have led to increase in the PM<sub>2.5</sub> (sub-atomic particles) concentrations. At all the three locations of Dayalbagh, PM<sub>2.5</sub> and PM<sub>10</sub> concentrations are beyond the WHO permissible limits.

Similarly, at Sanjay Place, concentration of  $PM_{2.5}$  has increased marginally but there is a significant decrease in concentration of  $PM_{10}$  in comparison to yesterday probably due to wash-out effect of rain. The concentration of both  $PM_{2.5}$  and  $PM_{10}$  are beyond the WHO permissible limits.

With reference to the Comments in yesterday's Report we would like to submit that the PM2.5 particles (sub-atomic particles) are mainly derived from anthropogenic activities and also formed in the atmosphere through secondary chemical reactions and gas- to-particle conversion processes. The PM10 particles comprise mainly larger particles which may be both anthropogenic and naturally derived (wind blown soil, dust particles). The PM10 fraction (aerodynamic diameter  $\leq$  10 µm) also includes the PM2.5 fraction (aerodynamic diameter  $\leq$  2.5 µm).

Since WHO (World Health Organization) Guidelines only provide a single value for permissible PM<sub>2.5</sub> and PM<sub>10</sub> pollutant concentrations and do not provide concentration bands for the different Air Quality Index (AQI) categories ranging from *Good* to *Hazardous for All*, as does the US EPA (United States Environmental Protection Agency), the Report 2 annexed based on US EPA norms may be referred to, for Air Quality Index (AQI) categories.

Communicated by Dr. Anita Lakhani, Associate Professor, Department of Chemistry, Faculty of Science, Dayalbagh Educational Institute, Dayalbagh, Agra.

## Radhasoami Dayal Ki Daya Radhasoami Sahai

### AIR QUALITY MONITORING @ 40 FEET HEIGHT – Report Date: 30.5.2022 (BASED ON US-EPA AQI STANDARDS AND THE DAYALBAGH AQI COLOUR CODE)

Permissible Limits (24 Hour Mean):  $PM_{10} = 150$ ;  $PM_{2.5} = 35$ , all units are in  $\mu g/m^3$ Sampling Duration = 24 hrs (9:00 AM to 9:00 AM)

	Date			D	AYAI	LBAG	H				Date	SANJAY PLACE									
	Todaw		(TIME	WEIG	HTED	AVER	RAGE	DAT	'A)		Today	(ARITHMETIC MEAN DATA)									
	Today:	Air Qua	lity Index	Meteorological Parameters							Today:	AQI		Meteorological Parameters							
	May 30 – 29 <b>Yesterday</b>		2.5 PM10	RH %	WS m/s	WD	T °C			RF <sup>2</sup> mm	May 30 – 29	PM2.5	PM <sub>10</sub>	RH %	WS m/s	WD	T °C				
		PM2.5							SR		Yesterday								SR W/m <sup>2</sup>	KF	
								W/m <sup>2</sup>												mm	
	May 29 – 28						Max	Min			May 29 – 28						Max	Min			
4 / 97	Today	68	70	62	3.1	SSE	44.3	28.4	134	18.5		147	140	56	2.1	SE	44.8	29.2	166	17	
	Yesterday	55	79	43	4.0	NE	43.7	31.9	162	0	Today										
3 / 34	Today	84	54	60	3.0	SSE	42.7	28.1	148	18.5											
	Yesterday	57	53	44	4.0	NE	43.1	32.0	178	0		139	171	40	2.6	N	45	34	207	0	
Science	Today	74	52	64	3.2	SSE	42.0	27.3	138	18.5	Yesterday										
Faculty	Yesterday	53	52	44	4.0	NE	43.6	31.8	172	0											

Good - G

Unhealthy for Sensitive Groups - UHS

Unhealthy for All - UHA

Very Unhealthy for All - VUHA

Hazardous for All - HZA Hazardous for All - HZA

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Similarly, at Sanjay Place, concentration of  $PM_{2.5}$  has increased marginally but there is a significant decrease in concentration of  $PM_{10}$  in comparison to yesterday probably due to wash-out effect of rain. The concentration of both  $PM_{2.5}$  and  $PM_{10}$  are beyond the WHO permissible limits. Perused <u>By Way of Information Only</u>, <u>Subject To</u> Legalise/Legalese/"Laws of the Land".

Monday, 30-05-2022, 03:48 PM Received, Monday, 30-05-2022, 01:12 PM

NOTE: 1 A continuous study conducted as part of Dayalbagh Sigma Six Qualities and Values Model implementation.

2 DEI is using United States Environmental Protection Agency (USEPA) methodology and online calculators to calculate AQI. For fair comparison with UPPCB Sanjay Place Weather Station readings,

their PM2.5 concentration readings are fed in USEPA online calculator for AQI calculation

Moderate - M

3 Formula for AQI calculation for a Pollutant -

 $I = \frac{I_{high} - I_{low}}{C_{high} - C_{low}} * (C - C_{low}) + I_{low}$ 

where, I = Air Quality Index, C=Pollutant Concentration (PM2.5), Clow=Concentration Breakpoint  $\leq$ C, Chigh=Concentration Breakpoint  $\geq$ C, Ilow=Index Break point corresponding to Clow, Ihigh=Index Breakpoint corresponding to Chigh