MONITORING OF ENVIRONMENTAL PLAN FOR JN PORT

ENVIRONMENTAL MONITORING REPORT- DECEMBER 2020 EXECUTIVE SUMMARY

1.0 Ambient Air Monitoring:

Monthly average values of Air Quality parameters at various stations in JNPT area during December, 2020.

Parameters			Industrial (Port Operation) Area						Residential Area	Eco Sensitive area
			Station name							
	Units	NAAQS	POC	IMC	NG	SEZ	APM	BMCT	RC	EC
PM_{10}	µg/m³	100	125.77	147.15	140.86	119.03	127.16	121.97	81.17	32.91
$PM_{2.5}$	µg/ m³	60	62.16	72.73	69.62	60.69	60.97	60.80	40.89	15.84
SO_2	µg/ m³	80	2.27	2.66	2.54	2.44	2.45	2.45	1.65	0.56
NO_2	µg/ m³	80	45.42	53.14	50.87	51.31	51.55	51.41	34.57	13.53
NH_3	µg/ m³	400	31.50	36.86	35.28	37.83	38.01	37.90	25.49	8.33
O^3	µg/ m³	100	11.46	12.83	13.41	12.68	12.74	12.70	8.54	2.91
Pb	µg/m³	0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
As	ng/m³	6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ni	ng/m³	20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
C_6H_6	µg/ m³	5	5.11	5.98	5.72	3.37	3.39	3.38	2.27	0.57
B(a)P	ng/ m³	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CO	mg/m³	2	0.70	0.82	0.79	0.93	0.93	0.93	0.63	0.34
CO_2	ppm		214	231	227	223	205	204	184	165
AQI			117.18	142.43	132.07	112.68	118.10	114.65	81.17	41.03

Conclusion:

- 24-hr average concentration of PM_{10}, $PM_{2.5}$, SO_2 and NO_2 and other parameters were measured at eight locations viz. POC, IMC, NG, SEZ, APM, BMCT, JNP residential township and EC area using high volume samplers, respirable sampler (APM 460 NL and APM 550 MFC) and gaseous sampler.

- During December, 2020 overall ambient air quality of the JN Port area is within CPCB permissible limits except Particulate Matter. To overcome Particulate Matter problem, the port is using number of precautionary measures, such as maintained a wide expanse of

Green zone, procurement of Electric Cart under green port initiatives, initiated Inter-Terminal Transfer (ITT) of tractor-trailers movement, switched from diesel to electrically powered e-RTGCs which not just help saving cost but are friendly to environment, installed solar panels on the roof tops of various building in the office premises which cumulatively reduces electricity consumption, the use of LED lights at JNP area helps in lower energy consumption and decreases the carbon foot prints in the environment, time to time cleaning of paved and unpaved roads, use of tarpaulin sheets to cover dumpers at project sites etc.. For cleaner and greener future.

- To reduce both fuel and money JNPT procure 15 Nos of E-RTGCs, this has been helping to reduce the consumption of diesel around 15-20 liters per hour.

- The prominent wind direction (blowing from) was South (S) in the port area, Average values of wind speed, temperature, relative humidity and solar radiation were 0.82 m/s, 28.29^{0}C, 67.16% and 59.78 w/m^2 respectively.

Corrective Action Suggested:

- Use of renewable energy like solar energy should be optimal and ensure to work continuously.
- Avoid excessive idling of automobiles and ships.
- Initiate Natural Gas (CNG) only as fuel by all buses and trucks.
- Dumper carrying construction material and earth filing material must be covered with tarpaulin sheet to reduce dispersal of dust in the air.
- New Services and technology like Electric cart, Inter-Terminal Transfer (ITT) are worthy selection to reduce Port operation efficiency and fuel cost.
- Conventional RTGCs should be altered as E-RTGCs counting inside the port completely.
- Stay sanitized of public transport and all basic items at public interaction places as much as possible.
- Practice should be initiated for using mask as preventative measure, to avoid inhalation of dust particle.

- To avoid airborne disease Port workers must maintain a safe distance from anyone who is coughing or sneezing.
- Implementation of New technology RFID (Radio Frequency Identification) by incorporate PUC certificate status to minimize the vehicle emission are good initiative.

2.0 Marine Water Quality

Observed concentration ranges of Marine Water for various parameters for JNP area during tidal *cycle (For* December*, 2020).*

Sr.	Parameter	Observed	Unit	Prescribed Limits
1	Temperature	˚C	26.80-27.70	**-**
2	pH	-	7.50-7.69	**6.5 - 9.0**
3	Salinity	ppt	34.7-35.9	**-**
4	Turbidity	NTU	25.4-40.8	**-**
5	TDS	mg/L	36284-41276	**-**
6	TSS	mg/L	268-413	**-**
7	TS	mg/L	36651-41606	**-**
8	DO	mg/L	5.68-6.38	**3.0 mg/L(min.) or 40% of saturation value**
9	COD	mg/L	93.2-131.2	**-**
10	BOD	mg/L	1.32-2.29	**5 (max.)**
11	NH_3-N	mg/L	0.0028-0.0125	**-**
12	Phenol	mg/L	0.0006-0.0017	**-**
13	Oil & Grease	mg/L	0.059-0.359	**10 (max.)**
14	Total Plate Count	CFU/ml	61-133	**-**
15	Fecal Coliforms	MPN/100ml	37-114	**500 (max.)**

Conclusion:

From the above results it can be concluded that, the Port's working does not affect the Quality of the Marine water. The overall Marine Water Quality of the Harbour is in good category.

3.0 Marine Ecology (Flora and Fauna):

Sr. No.	Parameter	Observed Range	Criteria
1	Net Primary Productivity	1.50-6.50 mg C/m^3/day	**<1500 mg C/m^3/day at surface**
2	Chlorophyll a	0.074-0.2619 mg/m^3	**<4 mg/m^3 (Oligotrophic class), 4-10 mg/m^3 (Mesotrophic class), >10 mg/m^3 (Eutrophic class)**

3	Phosphate	49.80-89.00µg/L	**0.1-90 µg/L**
4	Nitrate	148.1-387µg/L	**1.0-500 µg/L**
5	Nitrite	50.39-123.27 µg/L	**<125 µg/ L**
6	Particulate Organic Carbon	11.64-24.96 mg/m^3	**10-100 mg/m^3**
7	Silicate	9.11-24.85 µg/L	**10-5000 µg/L**

The results obtained from the study for the month of December, 2020. Phosphate, Nitrates, Nitrite and Silicate are also well within prescribing standards for ecological parameters for Arabian Sea. Net Primary Productivity and Chlorophyll-a were well within prescribe standards for ecological parameters for Arabian Sea. However, considering the activities in JNP Harbour, it is seen that the marine ecosystem is not adversely affected by Port activities.

Corrective Action Suggested:

Proper care should be taken for treatment of sewage and industrial waste before discharging into the open sea by nearby concerned cities, industrial estates and villages etc.

4.0 Drinking Water Quality

The drinking water being supplied to JN Port is safe for drinking purpose. At all drinking water monitoring stations around port area are found to be as per the drinking water specifications given in IS 10500:2012 and also on the basis of analysis parameter.