MONITORING OF ENVIRONMENTAL PLAN FOR JN PORT

ENVIRONMENTAL MONITORING REPORT-DECEMBER 2019 EXECUTIVE SUMMARY

1.0 Ambient Air Monitoring:

Monthly average values of Air Quality parameters at various stations in JNPT area during December, 2019

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	149.1	183.3	209.2	179.1	152.2	147.3	110.9	65.6
$PM_{2.5}$	µg/ m³	60	61.8	67.9	85.2	62.3	60.9	65.1	57.6	33.7
SO_x	µg/ m³	80	33.1	39.4	40.9	41.1	36.5	32.1	30.9	16.6
NO_x	µg/ m³	80	12.4	13.2	10.6	9.5	11.2	10.2	7.0	6.6
O^3	µg/ m³	100	10.2	9.5	9.9	9.7	10.6	9.1	9.7	8.5
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	1.2	1.3	1.4	1.2	0.9	1.4	1.1	1.0
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	4	1.3	1.4	1.2	1.4	1.4	1.3	1.2	1.1
CO_2	ppm		274.3	274.0	278.9	279.3	282.4	260.5	264.6	234.8
AQI			132.7	155.5	184.2	152.7	134.8	131.5	107.2	65.6

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, North Gate, SEZ, APM terminals, BMCT, JNP residential township and EC area using high volume samplers (APM 460 NL and APM 550 MFC).

- During December 2019 overall ambient air quality of the JN Port area is within CPCB permissible limits. Except PM_{10} (POC, IMC, NG, SEZ, APM, BMCT and RC) at and $PM_{2.5}$ (POC, IMC, NG, SEZ, APM and BMCT) other values were found in normal range at all location. To overcome particulate matter problem, the port is using number of precautionary measures, such as maintained a wide expanse of Green zone, procured Electric Cart under green port

initiatives, initiated Inter-Terminal Transfer (ITT) of tractor-trailers port, switched from diesel to electrically powered e-RTGCs, 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, water sprinkling on roads and project sites, use of tarpaulin sheets to cover dumpers etc. for cleaner and greener future.

- The prominent wind direction (blowing from) was South West (SW) in the port area. average values of wind speed, temperature, relative humidity and solar radiation recorded were 8.32m/s, 26.990C, 68.08% and 0.09CCM respectively.

Corrective Action Suggested:

- Initiate Natural Gas (CNG) as fuel by all buses and TTs.
- Promoting public transport as much as possible.
- Water sprinklers should be used on heavy traffic road to settle the dust particle. Avoid excessive idling of automobiles and ships.
- Initiate pure diesel with a maximum of 500 ppm Sulphur as fuel for vehicles.
- Regular cleaning and time to time collection of wreckage should be done from paved and unpaved road as well construction sites to decrease PM_{10} concentration.
- Dumper carrying construction material and earth filing material must be covered with tarpaulin sheet to reduce dispersal of dust in the air.
- Practice should be initiated for using mask as preventative measure, to avoid inhalation of dust particle.
- Each and every vehicles entering into the port region must be strictly checked PUC documents and encourage for regular maintenance of vehicle to minimize emission.
- At JNP Township green mesh cloth should be used to minimize dust generated during renovation work.
- New Services and technology like Electric cart, Inter-Terminal Transfer (ITT) are worthy selection to reduce Port operation efficiency and fuel cost.
- Evacuation of tractor trailers traffic as early as possible.

2.0 Marine Water Quality:

Observed concentration ranges of Marine Water for various parameters for JNP area during tidal cycle (For December, 2019).

Sr.	Parameter	Observed	Unit	Prescribed Limits
1	Temperature	˚C	28.3-29.6	**-**
2	pH	-	7.69-8.2	**6.5 - 9.0**
3	Salinity	ppt	25.3-36.4	**-**
4	Turbidity	NTU	8.71-33.1	**-**
5	TDS	mg/L	33214-39401	**-**
6	TSS	mg/L	156-367	**-**
7	TS	mg/L	33422-39625	**-**
8	DO	mg/L	3.88-4.96	**3.0 mg/L(min.) or 40% of saturation value**
9	COD	mg/L	32-192	**-**
10	BOD	mg/L	0.07-1.68	**5 (max.)**
11	NH_3-N	mg/L	0.123-1	**-**
12	Phenol	mg/L	<0.001	**-**
13	Oil & Grease	mg/L	0.077-0.561	**10 (max.)**
14	Total Plate Count	CFU/ml	77-118	**-**
15	Fecal Coliforms	MPN/100ml	62-101	**500 (max.)**

Conclusion:

From the above results it is 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	10.25-41.12 mg C/m^3/day	<1500 mg C/m^3/day at surface
2	Chlorophyll a	0.037-3.146 mg/m^3	<4 mg/m^3 (Oligotrophic class), 4-10 mg/m^3 (Mesotrophic class), >10 mg/m^3 (Eutrophic class)
3	Phosphate	65.6-89.97 µg/L	0.1-90 µg/L
4	Nitrate	18.43-135.06 µg/L	1.0-500 µg/L
5	Nitrite	<10 µg/L	<125 µg/L
6	Particulate Organic Carbon	164-278 mg/m^3	10-100 mg/m^3
7	Silicate	17.75-64.77 µg/L	10-5000 µg/L

The results obtained from the study for the month of December 2019. 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. The values for Particulate Organic Carbon (POC) exceeds the prescribed standards high due to detritus material originating from mangrove swamps, detritus plankton, benthos, fish etc. as well as untreated sewage discharges from nearby municipal corporations, MIDCs and villages around the area. 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, MIDCs 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.