MONITORING OF ENVIRONMENTAL PLAN FOR JN PORT

ENVIRONMENTAL MONITORING REPORT-JULY 2019 EXECUTIVE SUMMARY

1.0 Ambient Air Monitoring:

Monthly average values of air quality parameters at various stations in JNPT area during July, 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	76.2	82.4	100.8	83.8	88.1	88.9	60.1	39.2
$PM_{2.5}$	µg/ m³	60	27.8	51.3	39.9	30.3	32.5	34.8	30.4	22.1
SO_x	µg/ m³	80	19.3	20.5	21.3	19.0	19.6	18.4	18.4	12.6
NO_x	µg/ m³	80	17.1	18.2	19.2	17.3	16.9	16.5	14.9	10.3
O^3	µg/ m³	100	8.8	9.6	9.8	10.0	10.9	10.9	9.0	8.0
C_6H_6	µg/ m³	5	1.3	1.3	1.3	1.3	1.3	1.7	1.4	1.3
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	1.3	1.4	1.3	1.1	1.7	1.0	0.7
CO_2	ppm		276.6	280.0	277.3	272.3	274.3	313.9	277.3	259.7
AQI			76.2	85.5	100.5	83.8	88.1	88.9	60.1	39

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 July 2019 overall ambient air quality of the JN Port area is within CPCB permissible limits. It is noticed that concentration of PM_{10} was in normal range at all locations whereas slightly above permissible limits at North Gate Sight. $PM_{2.5}$ 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, initiated Inter-Terminal Transfer (ITT) of tractor-trailers port, switched from diesel to electrically powered e-RTGCs which not just help saving cost but are friendly to environment, modal shifts to rail helps in reducing the burden of trucks on the existing road infrastructure, 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 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, solar radiation and rainfall recorded were 3.34m/s, 27.95^{0}C, 89.53 %, and 0.08CCM, 787.00 mm respectively.

Corrective Action Suggested:

- During rainy season, regular maintenance of roads is necessary due to continues trailer movement paved road become unpaved
- During monsoon stagnant water in road side pits increases, so regular cleaning and time to time collection of wreckage should be done.
- Switching to cleaner versions of diesel fuel and restricting idling of vehicles, ships, etc.
- New Services and technology like Inter-Terminal Transfer (ITT) are worthy selection to reduce Port operation fuel cost.
- Dumper carrying construction material and earth filing material must be covered with tarpaulin sheet to reduce dispersal of dust in the air.
- During renovation work at JNP Township green mesh cloth should be used to minimize dust generated.

2.0 Marine Water Quality

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

Sr.	Parameter	Observed	Unit	Prescribed Limits
1	Temperature	˚C	27.04-28.9	-
2	pH	-	7.54-8.63	**6.5 - 9.0**
3	Salinity	ppt	5.1-24.8	-
4	Turbidity	NTU	21-58.8	-
5	TDS	mg/L	17621-36078	-
6	TSS	mg/L	109-200	-
7	TS	mg/L	17732-36200	-

8	DO	mg/L	4.8-5.87	**3.0 mg/L(min.) or 40% of saturation value**
9	COD	mg/L	112-320	**-**
10	BOD	mg/L	1.07-3.86	**5 (max.)**
11	NH_3-N	mg/L	<1	**-**
12	Phenol	mg/L	<0.001	**-**
13	Oil & Grease	mg/L	<4.0	**10 (max.)**
14	Total Plate Count	CFU/ml	75-114	**-**
15	Fecal Coli forms	MPN/100ml	63-142	**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 <u>Marine Ecology (Flora and Fauna):</u>

Sr. No.	Parameter	Observed Range	Criteria
1	Net Primary Productivity	99.7-128.5 mg C/m^3/day	<1500 mg C/m^3/day at surface
2	Chlorophyll a	0.548-1.376 mg/m^3	<4 mg/m^3 (Oligotrophic class), 4-10 mg/m^3 (Mesotrophic class), >10 mg/m^3 (Eutrophic class)
3	Phosphate	10.3-83.8 µg/L	0.1-90 µg/L
4	Nitrate	61.2-121.8 µg/L	1.0-500 µg/L
5	Nitrite	<10 µg/L	<125 µg/L
6	Particulate Organic Carbon	185-219 mg/m^3	10-100 mg/m^3
7	Silicate	129-196 µg/L	10-5000 µg/L

The results obtained from the study for the month of July 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.