

MONITORING OF ENVIRONMENTAL PLAN FOR JN PORT

ENVIRONMENTAL MONITORING REPORT- DECEMBER 2021 EXECUTIVE SUMMARY

1.0 Ambient Air Monitoring:

Monthly average values of Air Quality parameters at various stations in JNPT areaduring December, 2021.

Parameters			Industrial (Port Operation) Area						Residential Area	Eco Sensitive area
			LOCATIONS							
	Units	NAAQS	IMC	NG	SEZ	APM	BMCT	CB	RC	EC
PM ₁₀	µg/m ³	100	267.07	261.56	193.95	151.85	210.04	203.15	147.98	145.01
PM _{2.5}	µg/ m ³	60	119.88	105.75	105.82	99.30	102.13	109.11	95.10	23.52
SO ₂	µg/ m ³	80	30.74	24.89	12.21	14.48	13.37	13.44	8.22	15.81
NO ₂	µg/ m ³	80	81.89	61.25	21.67	31.08	27.10	27.99	17.91	16.97
NH ₃	µg/ m ³	80	33.04	31.40	32.41	31.20	31.91	29.02	20.08	14.57
O ₃	µg/ m ³	100	15.63	4.81	5.01	13.74	10.31	9.35	0.70	0.32
Pb	µg/m ³	0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
As	ng/m ³	6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ni	ng/m ³	20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
C ₆ H ₆	µg/ m ³	5	2.23	2.22	2.19	2.20	2.18	1.98	1.20	0.75
B(a)P	ng/ m ³	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CO	mg/m ³	4	0.82	0.80	0.79	0.79	0.78	0.68	0.34	0.28
AQI			299.00	252.50	252.74	231.00	240.00	263.70	217.01	130.01

1.1 Continuous Ambient Air Quality Monitoring:

Monthly average values of Air Quality parameters by Continuous Ambient Air Quality Monitoring Station at Port Operation Center (POC) - JNPT area during December, 2021

Date	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	C ₆ H ₆	CO	C ₇ H ₈	NO	NO _x	AQI
	ug/ m ³	mg/ m ³	ug/ m ³	ug/ m ³	ug/ m ³	Remarks:						
NAAQS	100	60	80	80	400	100	5	2	--	--	--	Poor
Average Dec-21	161.95	95.51	4.54	15.84	21.14	7.24	4.88	0.84	51.48	12.69	21.67	218.37

Conclusion:

- 24-hr average concentration of PM₁₀, PM_{2.5}, SO₂, NO₂, NH₃ other parameters were measured at nine locations with one continuous and 8 fixed Monitoring station viz. IMC, NG, SEZ, APM, BMCT, CB, JNP residential township and EC area using high volume air samplers, respirable dust sampler (APM 460 NL and APM 550 MFC) and gaseous sampler and at POC using continuous air quality monitoring station.
- During December, 2021 overall ambient air quality of the JNPT is within CPCB permissible limits except PM₁₀, PM_{2.5} and NO₂@IMC area is due to Cold air that is denser leads to barrier for dispersion for Air Particles. To improve air Quality 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, switched from diesel to electrically powered e-RTGCs which not just help saving cost also eco-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.
- JNPT Goes Green by deploys 9 e-vehicles and committed to sustainable growth to reduce the port's impact on the environment and neighboring communities. E-cars are zero-emission vehicles that enable the transition of JN Port to green and energy-efficient mobility solutions.
- JN Port received rainfall around 86.00 mm during December, 2021 and the entire rainfall is 2933.96 mm the prominent wind direction (blowing from) was the North West (NW) in the port area. Average values of wind speed, temperature, relative humidity and solar radiation recorded were 2.81Km/Hr, 27.50°C, 75.50% and 30.05 W/m² respectively. The maximum wind speed recorded was 4.03 Km/Hr.

Solution towards the Green port:

- Practice should be initiated for using mask as preventative measure, to avoid inhalation of dust particle- Mask advised in sensitive areas.
- Awareness for public must be created to reduce the Burning of wood chulha during Cold Air gust.
- To avoid airborne disease Port workers must maintain a safe distance from anyone who is coughing or sneezing.
- Use of renewable energy like solar energy should be optimal and ensure to work continuously.

- Display of Environmental Initiative Boards as like JNPT Township, to create awareness towards public.
- Stay sanitized of public transport and all basic items at public interaction places as much as possible.
- 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.
- New scanning technology and new high power Tugs are reducing operation timing and CO₂ Emission are good creativity.
- Initiate Natural Gas (CNG) only as fuel by all buses and trucks.

2.0 Marine Water Quality

Observed concentration ranges of Marine Water for various parameters for JNP area during tidal cycle (For December, 2021).

Sr.	Parameter	Observed	Unit	Prescribed Limits
1	Temperature	°C	27.1-28.4	-
2	pH	-	6.41-7.72	6.5 - 9.0
3	Salinity	ppt	31.1-33.1	-
4	Turbidity	NTU	16.5-29.6	-
5	TDS	mg/L	32320-41561	-
6	TSS	mg/L	175-305	-
7	TS	mg/L	32592-41824	-
8	DO	mg/L	5.9-6.22	3.0 mg/L(min.) or 40%of saturation value
9	COD	mg/L	24.8-108.4	-
10	BOD	mg/L	1.77-2.87	5 (max.)
11	Ammonia	mg/L	0.0226-0.038	-
12	Phenol	mg/L	0.002-0.021	-
13	Oil & Grease	mg/L	0.0129-0.6600	10 (max.)
14	Total Plate Count	CFU/ml	96-198	-
15	Fecal Coliforms	MPN/100ml	89-166	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	0.35-2.04 mg C/m ³ /day	<1500 mg C/m ³ /day at surface

2	Chlorophyll a	0.3204-0.7476 mg/m ³	<4 mg/m ³ (Oligotrophic class), 4-10 mg/m ³ (Mesotrophic class), >10 mg/m ³ (Eutrophic class)
3	Phosphate	67-111 µg/L	0.1-90 µg/L
4	Nitrate	842.4-2067.2 µg/L	1.0-500 µg/L
5	Nitrite	204-349µg/L	<125 µg/ L
6	Particulate Organic Carbon	16.53-30.99 mg/m ³	10-100 mg/m ³
7	Silicate	32.6-72.7 µg/L	10-5000 µg/L

The results obtained from the study for the month of December, 2021. Nitrates, Nitrite and phosphate were observed higher than prescribed standards limits of ecological parameters for Arabian Sea as monsoon upwelling causes enormous increase of these nutrient. Net Primary Productivity and Chlorophyll-a were well within prescribed 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.

5.0 Monitoring of Performance of Sewage Treatment Plant

It is seen that the performance of STP at JNP Township is satisfactory. The treatment plant was well maintained during [December 2021] with considerable removal efficiency achieving the standards prescribed for final disposal.