Project Code: UP-2-37-90

NAME OF PROJECT **Indorama India Private Ltd (Jagdishpur)**

CLEARANCE LETTER NO.: 21/15/84-EN-I issued on 8.1.1985

PERIOD OF COMPLIANCE LETTER **October -22 – March-23**

ENVIRONMENT CONDITIONS

<table>
<tr><th>SNo</th><th>CONDITION</th><th>COMPLIANCE STATUS</th></tr>
<tr><td>1.</td><td>All efforts should be made by the project Proponent in maintaining the air emissions to the lowest possible preferably well below the prescribed limits, utilizing the best available technologies in this regard. The limits are as indicated below:

a Ammonia (NH3) - 50 ppm
b Urea dust - 40 mg /Nm^3
c Metal dust - 30 mg/ Nm^3

The level of urea dust mentioned above has been specially agreed to in view of the difficulties expressed by the project Proponent and to bring down further extensive technology changes may have to be adopted which are difficult at the present stage of technology tie-ups. Stringent standards are to be adopted whether these are from Central Board or State Board for Pollution control.</td><td>In Compliance. Air emissions are being maintained below prescribed limits.

NOx & SOx are well within the prescribed limit of SPCB. Trend of emission from the stacks are as below for the period of October-22 – March -23

<table>
<tr><th></th><th>SGP stack</th><th>GT stack</th><th>Primary Reformer</th></tr>
<tr><td>Nox</td><td>74 – 82 ppm</td><td>77– 83 ppm</td><td>174 – 184 ppm</td></tr>
<tr><td>Sox</td><td>BDL</td><td>BDL</td><td>BDL</td></tr>
</table>

<table>
<tr><th colspan="4">Prilling Tower</th></tr>
<tr><td></td><td>Min</td><td>Max</td><td>Average</td></tr>
<tr><td>SPM</td><td>34 mg/nm3</td><td>40 mg/nm3,</td><td>36.58 mg/nm3</td></tr>
<tr><td>NH3</td><td>36 ppm</td><td>44 ppm</td><td>39.53 ppm</td></tr>
</table>

There is no metal dust found in the analysis from Prilling Tower.

The current limit of SPM at prilling tower is 50 mg/Nm^3 as per EC No. J-11011/314/2006-IA. II (I) issued on dated 13.7.2007.</td></tr>
<tr><td>2.</td><td>Although the pollution problem due to emission of SO_2 is not expected as the sulphur content in the natural gas is 10 ppm as H_2S. The stack connected to the Power plant should be provided with a continuous SO_2 monitoring system. The stack height shall be as stipulated in</td><td>In Compliance. Continuous on line SO_2 monitoring system has been provided in the stack of steam generation in Power Plant for continuous monitoring of SO_2 Gaseous Emission. Stack height is 125 meters as per regulations.</td></tr>
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<table>
<tr><td></td><td>Central Board's regulations</td><td></td></tr>
<tr><td>3.</td><td>The Prilling tower should have a built-in facilities for monitoring the urea dust discharge from it.</td><td>In Compliance. The condition for built in facility of Urea monitoring has been waived off as per letter No.21/15/84-IA-II dated 24.10.2000 of MOEF, New Delhi. As suggested in the amendment, the urea dust emission at urea prilling tower is being monitored on weekly basis and statistical analysis of data (Refer compliance status against condition No.1 above) is being submitted to Regional office on monthly basis.</td></tr>
<tr><td>4.</td><td>The control of air emissions in the plant environment depends very much on control measures and house keeping. Leaks and other unguarded releases should be promptly identified and set right. When air stripping of ammonia is adopted for effluent treatment, the tower should be located with due consideration of wind direction.</td><td>In Compliance. Effective control measures are in place and leaks if any and/or unguarded releases are being identified and attended promptly. We have also adopted world class practices like ISO-14001, TPM, 5S etc which are also helping in keeping area clean and environment friendly.</td></tr>
<tr><td>5.</td><td>For effective dispersion atmospheric emissions stack height should be a minimum 90 meters diameter of 28m. The ground level concentration of individual pollutants should be within the limits prescribed by the competent authority</td><td>In Compliance. Prilling Tower height is 95 meter and its diameter is 28meter.

Ground level concentration of individual pollutants is within limits prescribed by the competent authority. Please refer Table 1.
Table – 1
<table>
<tr><th rowspan="2">Location</th><th colspan="3">Ammonia in ppm</th></tr>
<tr><th>Min</th><th>Max</th><th>Avg.</th></tr>
<tr><td>Synthesis gas area</td><td>5.0</td><td>6.0</td><td>5.50</td></tr>
<tr><td>Near R2 in Urea plant</td><td>5.0</td><td>6.0</td><td>5.42</td></tr>
<tr><td>Near bagging machine</td><td>4.0</td><td>7.0</td><td>5.67</td></tr>
<tr><th rowspan="2">Location</th><th colspan="3">SPM in µg/M^3</th></tr>
<tr><th>Min</th><th>Max</th><th>Avg.</th></tr>
<tr><td>Near bagging machine</td><td>114.0</td><td>128.0</td><td>118.75</td></tr>
<tr><td>Near truck loading area</td><td>108.0</td><td>122.0</td><td>116.75</td></tr>
<tr><td>Near R2 in Urea plant</td><td>117.0</td><td>130.0</td><td>125.75</td></tr>
</table></td></tr>
<tr><td>6.</td><td>The Industry should install separate drains for (a) storm water, (b) sanitary waste waters and (c) liquid industrial effluent and the entire layout plan for this must get approved by the U.P. State Pollution Control Board.</td><td>In Compliance. There are separate drains for storm water, sanitary wastewater and liquid industrial effluent. Layout plan for the same is approved by State Pollution Control Board vide their letter No. G22893/C-6/water/30 dated 28.10.99.</td></tr>
<tr><td>7.</td><td>The waste- waters of raw water treatment plant, D.M. plant and the boiler</td><td>In Compliance. Waste- water of DM Plant, pre-treatment plant, boiler blow down has been kept separate from waste effluents of Ammonia Plant and</td></tr>
</table>

	blow-down water shall not be allowed to mix up with the ammonia and urea plant effluents. Proper segregation of effluents should be made for ensuring better environmental control measures.	Urea Plant since design stage. For effective environmental control appropriate measures, proper segregation of effluents has been made by providing separate pits from design stage.
8.	The hydrolyser-stripper unit should be so designed to obtain less than 100 mg/L of total Kjeldhal nitrogen (TKN) in the waste- waters from ammonia and urea plants along with their cooling tower blow-down.	**In Compliance.** TKN during the period of October -22– March -23 is as below: At Hydrolyser stripper outlet Average–5.6 ppm At APC Stripper Outlet Average–8.2 ppm
9.	Oil bearing waste- waters should be treated for removal of oily matter before discharge to the effluent drain;	**In Compliance.** An oily water treatment system for treatment of oil-bearing water is working since inception and oil is controlled within the prescribed limit.
10.	A separate treatment plant should be provided to treat sanitary sewage from the township to meet the standards laid- down by the U.P. Pollution control Board. Design details for sewage treatment plant should also be made available to the U.P. Pollution Control Board and Central Board. The treated effluent can be utilized on land, if possible;	**In Compliance.** Sewage from township as well as factory is being treated separately in Sewage treatment plant(STP). Design details and test report of domestic effluent water quality from STP is being verified by UPPCB vide letter No. 420/I-3/A/2022-23 dated 08.08.2022. All domestic treated effluent is being utilized for irrigation purposes from June-2022 onwards.
11.	Sanitary sewage from Plant toilets can be treated along with the ammonical effluents;	**In Compliance.** Sanitary sewage from plant toilets is treated in sewage treatment plant along with sewage from township.
12.	Holding tanks of adequate capacity should be constructed to take care of the occasional draining particularly from the urea plant. The time of holding may be decided with the State Pollution Control Board. This waste-water may be either treats in the existing hydrolyser stripper or an additional ammonia stripping system to treat the effluent stored	**In Compliance.** A waste-water buffer tank for occasional draining from urea plant has been provided to hold waste- water for min. 4 hours. The holding time has been decided by UPPCB Authority vide their letter No. G22893/c-6/water/30 dated 28.10.99. The waste- water from holding tank is being treated in the existing hydrolyser unit of the mainstream & recycled in the process.

<table>
<tr><td></td><td>in the holding tank should be provided;</td><td></td></tr>
<tr><td>13.</td><td>Use of biocides namely Methylene, biocynate and quaternary amines for controlling microbiological activity in the cooling water is envisaged. Toxicity and concentration of these biocides or any other the presently proposed by the project proponent should be assessed and adequate steps should be taken to avoid any adverse effect on flora and fauna including the workers of the factory as well as or the user of the water from the river in which the waste-water is finally to be discharged;</td><td>In Compliance. Biocides are used only in cooling water & regular bio-assay test is carried out to monitor toxicity of the biocide. Toxicity of effluent is also checked by approved lab on regular intervals and results are always well within the norms.</td></tr>
<tr><td>14.</td><td>There should be a guard pond located near the terminal end of all the effluents before final disposal to the Kathora nallah. This ponds for equalisation of the effluents and also to provide some detention time before disposal. The pond shall have two compartments. One will be kept empty while the other will be operated as a routing guard pond. When the concentration of the pollutants are high in the final effluent, corrective measures should be taken at source and effluent shall be discharged at a regulated rate after treatment, to conform the prescribed limits;</td><td>In Compliance. Guard ponds have been provided near terminal end of effluents. Guard pond is having two compartments namely 1714 A and 1714 B.
The pollutants are discharged only after conforming to the prescribed limit. Statistical data of final effluent after treatment during the period of October -22 – March -23 are given in table-2.
Table -2
<table>
<tr><th rowspan="2">Parameter</th><th colspan="3">Result in ppm</th></tr>
<tr><th>Min.</th><th>Max.</th><th>Avg</th></tr>
<tr><td>pH</td><td>7.1</td><td>7.80</td><td>7.36</td></tr>
<tr><td>Total Suspended solid</td><td>37.00</td><td>57.00</td><td>44.41</td></tr>
<tr><td>TAN</td><td>8.00</td><td>39.00</td><td>23.10</td></tr>
<tr><td>TKN</td><td>17.00</td><td>57.00</td><td>38.00</td></tr>
<tr><td>Free Ammonia</td><td>N.T.</td><td>1.65</td><td>0.42</td></tr>
<tr><td>Oil & Grease</td><td>N.T.</td><td>N.T.</td><td>N.T.</td></tr>
<tr><td>Nitrate Nitrogen</td><td>4.00</td><td>9.00</td><td>7.86</td></tr>
<tr><td>Phosphate as P</td><td>0.70</td><td>1.90</td><td>1.34</td></tr>
<tr><td>COD</td><td>15.00</td><td>28.00</td><td>22.02</td></tr>
<tr><td>BOD</td><td>9.00</td><td>14.00</td><td>10.70</td></tr>
<tr><td>Lead (as Pb)</td><td>N.T.</td><td>N.T.</td><td>N.T.</td></tr>
<tr><td>Copper (as Cu)</td><td>N.T.</td><td>N.T.</td><td>N.T.</td></tr>
<tr><td>Zinc (as Zn.)</td><td>0.10</td><td>0.53</td><td>0.33</td></tr>
<tr><td>Nickel (as Ni)</td><td>N.T.</td><td>N.T.</td><td>N.T.</td></tr>
<tr><td>Fluoride (as F)</td><td>0.76</td><td>1.10</td><td>0.93</td></tr>
<tr><td>Sulphide (as S)</td><td>0.010</td><td>0.011</td><td>0.010</td></tr>
<tr><td>Iron (as Fe)</td><td>0.10</td><td>0.38</td><td>0.17</td></tr>
<tr><td>Vanadium (as V)</td><td>N.T.</td><td>0.10</td><td>0.096</td></tr>
<tr><td>Bioassay test for 90% survival after 96 hrs.</td><td>Pass</td><td>Pass</td><td>Pass</td></tr>
</table>
N.T – Not Traceable
Elements like As, Hg, Cd, Cr, Se, CN, Mn, Phenolic</td></tr>
</table>

		compounds & Radioactive materials are not applicable to us.
15.	The urea solution (scrubbed) must be reused in the production of urea;	**In Compliance.** Scrubbed /urea dust is being reused in production of urea.
16.	Continuous flow indicator, pH and ammonia analysers with recording system along with high level alarm device should be provided for monitoring the final combined waste- waters at the guard pond as well as ammonia and urea bearing stream separately;	**In Compliance.** Continuous flow indicator, pH and ammonia analysers with recording system along with high level alarm at guard ponds are provided. Similar analyzers are provided at the Ammonia & Urea bearing streams in Urea plant.
17.	Efforts should be made to utilize the final effluent to the maximum possible extent for the purpose of irrigation or developing green belts surrounding the battery limit of the factory;	**In Compliance.** Pipe network is spread in plant as well as in township for utilization of final treated effluents for green belt development and 66.06% of final treated mixed effluent has been utilized during the period of October -22 – March-23.
18.	Provision for sludge lagoons has to be incorporated and dry sludge shall be used for land-fill purpose with suitable land-scape taking care that the leachates if any, do not reach the ground water;	**In Compliance.** We have stopped Lime softening system for softening of raw water and have installed environment friendly technology of Zeolite based softening in Nov'04. This has resulted in total elimination of Dry Sludge generation.
19.	Noise and vibration within the plant environment require attention for their suppression. Adequate personal protective equipment should be provided to the workers for mitigating the ill effects of noise pollution;	**In Compliance.** Noise control measures are in built with plant. Adequate personal protective equipment is also provided to workers for mitigating ill effects of noise pollution wherever required. Caution against high noise, are also displayed at prominent places in high noise area for use of PPE.
20.	The development of green belt and its maintenance is the responsibility of the project proponent. While making the land use plan, adequate emphasis should be given to this aspect and the trees chosen for development of green belt should be such that they will be able to offer maximum green cover	**In Compliance.** The condition of Green belt has been amended vide the letter of MOEF, New Delhi No.21/15/84-IA-II dated 24.10.2000. After debottlenecking, greenbelt is maintained as per EC issued vide letter No. J 11011/314/2006-IA-II(I) issued on 13.7.2007 by MOEF.

<table>
<tr><td></td><td>(canopy). The plan thereby drawn-up in this regard should be communicated to the Department of Environment. Green belt of 50 meters wide throughout the periphery of the plant site, except between the switch yard and Gas metering station and on the Rly siding side (towards road No. 5), 150 meters depth on the downward direction of wind at the plant site (i.e. Road No.4) and 200 meter wide near 24 mt. Wide UPSIDC road,50 meters wide on each side of the road passing in between the plant and residential site areas should be developed. Similarly, within their own campus, they should develop road-side green complex;</td><td></td></tr>
<tr><td>21.</td><td>Continuous monitoring of environmental parameters (air, water-surface as well as sub-surface, noise/ vibration, soil) micro-meteorological data and performance of pollution control facilities in the plant are vital aspects of assessing the future impact of the industry on the environment. An environmental surveillance laboratory with full complement of trained staff and equipment should be laboratory should start working of the initiation of the construction phase so that necessary back-ground data on air, soil and water quality and other factors in that region is made available for future references. Micro-meteorological data should also be collected at the project site from the</td><td>In Compliance. Environmental parameters are being monitored regularly and all the reports are being submitted to statutory bodies.
A well-equipped laboratory having trained staff and modern equipments is operating round the clock for monitoring of effluents and environment. Equipment for environment monitoring are already in place.
Ambient air quality is monitored on regular intervals from 3 no’s of AAQ stations.
We have installed continuous online ambient air quality monitoring system for parameters of PM-10, PM-2.5, NH3, NOx and SOX at one of the three ambient air monitoring stations in downwind direction. Results are indicated in table 3 below-
Table-3
<table>
<tr><th>Range</th><th>PM – 10 PPM</th><th>PM-2.5 PPM</th><th>NOx µg/M^3</th><th>Sox µg/M^3</th><th>NH3 µg/M^3</th></tr>
<tr><td>Min.</td><td>37.00</td><td>25.00</td><td>10.0</td><td>BDL</td><td>24.00</td></tr>
<tr><td>Max.</td><td>63.00</td><td>43.00</td><td>20.0</td><td>BDL</td><td>69.00</td></tr>
<tr><td>Avg.</td><td>56.43</td><td>35.89</td><td>13.87</td><td>BDL</td><td>52.70</td></tr>
</table>
Underground water quality is also monitored at regular intervals by four Nos of Digital type telemetry piezometers installed inside the complex & 2 hand pumps located in near-by area.
Summary of Ground water analysis for the period of October -22 – March -23 is as under:</td></tr>
</table>

	beginning.	pH : 7.10 – 7.70 Nitrate as : N.T – 0.90 ppm Fluoride as F: 0.40– 0.60 ppm Ammonia as NH3: N.T. Phosphate as P: N.T.
22.	Disposal of solid wastes catalysts should be carefully regulated. Probable composition of the catalyst to be used, be made available to this Department. The waste-catalyst disposal should be indicated in the management plan to be prepared with alterations;	**In Compliance.** Disposal of Hazardous waste is being done to authorized reprocessors as per guidelines of Hazardous waste rule 1989. Hazardous Waste Authorization issued by UPPCB is valid up to 20.02.2024. Composition of catalysts used & its management plan has already been submitted to MOEF/SPCB.
23.	Proper safety and fire hazards precautions should be planned before plant goes into operation and should be reported to this Deptt.	**In Compliance.** Action plan for handling of hazardous chemicals and fire & safety are in practice. Company is also certified for ISO-18001, Occupational health & safety management system for effective management & monitoring.
24.	Details of pollution control devices and methodologies of treatment should be provided to this Department as soon as they are finalised;	**In Compliance.** Details of pollution control devices and methodologies of treatment system has already been submitted to MOEF.
25.	The standards laid-down for occupation health of the works should be adopted and followed. If the Indian Standards in this regard are not available, the relevant WHO/ILO/OSHA standards should be followed;	**In Compliance.** Standard laid down for occupational health of workers have been adopted as per Factory act. Health checkup of all employees was carried out on regular interval & no employee was found affected with occupational disease.
26.	The project proponents should prepare an Environmental Management Plan for the proposed activities and their long-term plan envisaged in this regard, incorporating the suggestions made by the Department of Environment to minimize the impact of pollutants due to setting-up of this industry in Jagdishpur region. The EMP should also include budgetary	**In Compliance.** EMP had been prepared incorporating suggestions and recommendations of Department of Environment & Forest. We are performing various socio-economic activities for welfare of communities. In addition to this, environment objectives are set by respective departments, with action plan under ISO-14001 for continuous improvement of Environment Protection.

	provisions that are made for this purpose and socio-economic aspects;	
27.	Report on the implementation of various suggestions and the data gathered as above should be submitted to the Department of Environment, at regular intervals.	**In Compliance.** Necessary analysis & monitoring data & information's are mentioned in respective column of conditions.
Amended conditions as per letter No. 21/15/84-IA dated 9.3.1988		
i	Ambient air quality stations are to be relocated at Plants site in consultation with Meteorological department, Govt. of India, New Delhi.	**In Compliance.** Ambient air stations were reviewed by meteorological dep't. Vide their letter No. EMU-01966/8730 dated 7.7.1999 & advised no change in the existing locations. Further, these are again reviewed by the SPCB vide their letter NO. 330/Air monitoring/08-09 dated 06.08.2008 based on which AAQ station No.2 has been relocated as per recommendation of SPCB. Further on our request, the location of air monitoring stations have been reviewed by the SPCB and found satisfactory vide their letter no-1025/I-2/C/11-12 dated 27.01.12. Moreover, on our request, these are again reviewed by the SPCB vide their letter No. 638/I-2/11-12 dated 30.11.2012 based on which AAQ station No.3 has been relocated as per recommendation of SPCB.
ii	Only LSHS should be used until the natural gas supply reaches the plant.	**In Compliance.** The Use of LSHS stopped & Natural gas is being used continuously.
iii	Green belt as proposed below must be developed & maintained a. A 200 m wide green belt all around the periphery. b. A 300 m green belt in the downward direction of the wind prevailing for most of the time.	**In Compliance.** The condition of Green belt has been amended vide the letter of MOEF, New Delhi No.21/15/84-IA-II dated 24.10.2000. After debottlenecking, greenbelt is maintained as per EC issued vide letter No. J 11011/314/2006-IA-II(I) issued on 13.7.2007 by MoEFCC.