Acknowledgement Copy

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June 11, 2018

Member Secretary
Goa State Pollution Control Board
Dempo Tower, I Floor
EDC Complex, Patto Plaza
Panaji-403 001, Goa

13/06/18

Goa State Pollution Control Board
EDC, Patto Plaza
Panaji, Goa - 403 001

Dear Sir,

Subject: Submission of 18th Compliance Status Report of EC conditions including results of monitored data for the period October 2017 to March 2018

Reference: EC no. F.No. J-11011/217/2008-IA-II(I) dated 1st September, 2009 and Corrigendum dated 30th October, 2009 issued by Ministry of Environment and Forests, New Delhi.

With reference to above and in compliance with the stipulated conditions mentioned in the Environmental Clearance (EC) issued to us, we are submitting herewith the 18th Compliance Status Report of the stipulated EC conditions including results of monitored data for the period October 2017 to March 2018. The soft copy of the same is also sent to your office by e-mail at goapcb@rediffmail.com and the same is being uploaded on our Company's website at www.zuari.in.

In compliance with the EC conditions, the Compliance Status Report is also submitted, both on hard copy which also has a CD version of the report firmly attached to the last page of the report as well sent as soft copy through e-mail, to RO-MoEF, Bangalore and ZO-CPCB, Bangalore.

All necessary contact details are also submitted herewith as Annexure I.

Thanking You,

Yours faithfully,
For **Zuari Agro Chemicals Ltd.**

A.A.Pacheco
General Manager – Manufacturing

Enclosed: as above

ZUARI AGRO CHEMICALS LIMITED
CIN No.: L65910GA2009PLC006177
Registered Office: Jaikisaan Bhawan, Zuarinagar, Goa - 403 726, India.
Tel: +0832 2592180, 2592181, 6752399

11th June, 2018

ZUARI AGRO CHEMICALS LIMITED

JAI KISAAN BHAWAN, ZUARINAGAR- 403726, GOA

18th COMPLIANCE STATUS REPORT OF ENVIRONMENTAL CLEARANCE CONDITIONS

INCLUDING RESULTS OF MONITORED DATA FOR THE PERIOD October 2017 to March 2018

Reference:

Environmental Clearance No. J-11011/217/2008-IA-II (I) dt. 1st September, 2009 and Corrigendum dt. 30th October, 2009 issued by Ministry of Environment and Forests, Government of India, New Delhi.

Project:

Revamp of Ammonia plant for changeover of feedstock and fuel from Naphtha to NG / RLNG and reduction of specific energy consumption along with debottlenecking the capacity of Ammonia and Urea plants, changeover of fuel from FO to NG / RLNG in the Utility Boilers as also debottlenecking the capacity of NPK plants A & B along with product mix change at Zuarinagar, Goa by M/s. Zuari Agro Chemicals Ltd.

Status of the Project:

The first phase of feed and fuel change over from Naphtha to NG / RLNG in Ammonia plant and fuel changeover from Furnace Oil to NG / RLNG in Utilities Boilers has been successfully carried out on line without any plant stoppage during February 2013. For the revamp for debottlenecking the capacity of Ammonia and Urea (including Granulation) plants and at reduced specific energy consumption, the delivery of the Basic Engineering Design Package (BEDP) was completed in July-2016 by M/s CASALE, Switzerland. The next phase of the Ammonia-Urea Plant Revamp would be the Financial Closure and award of EPC Contract which is expected to be completed by August-2018. Also, the Revamp of Steam-Power Generation Facility along with the Installation of Urea Granulation unit are integrated with the Revamp of Ammonia, Urea Plants. The Process of obtaining EC for these additional features is underway. In the Ammonia plant, in compliance with the EC/CREP, the Solution in the CO_2 Removal section has been swapped from Arsenic bearing Modified Benfield Solution to Non-Arsenic based GV Solution (V_2O_5 based). Necessary hardware additions were also done along with the Solution Swap. The disposal of the modified Benfield Solution through Solidification/Stabilization has been completed in February, 2017. The debottlenecking project for enhanced capacity of NPK plant-A and NPK plant-B along with product mix change has been completed and the plants are operational effective from December, 2015 and May, 2017 respectively. The revamped Scrubbing Systems in the NPK-A and NPK-B Plants have been very effective such that the Ammonia emissions are well below the prescribed emission norms. We have obtained the Consent to Establish from Goa State Pollution Control Board in June 2012 for the entire project and we also obtained the Consent to operate the plants for enhanced capacities letter dt. 13th April, 2014.

Sr.No	EC CONDITIONS FOR COMPLIANCE	STATUS / ACTION PLAN
	A. SPECIFIC CONDITIONS:	
i)	The project authority shall treat the industrial and domestic effluent as per the standards notified under Environment (Protection) Rules, 1986 or prescribed by Goa State Pollution Control Board whichever are stringent. The treated wastewater shall be recycled/reused/used for irrigation/green belt development and zero discharge shall be maintained.	The industrial effluent is given treatment which includes oil/grit removal, settling, pH correction and temporary storage in Effluent Treatment Plant. The treated industrial effluent is totally recycled to NPK-A and NPK-B plants for process use. The domestic effluent is treated separately in Sewage Treatment Plant and the treated domestic effluent is totally recycled to cooling towers as part make up. Reverse Osmosis (RO) Unit is also installed in ETP to enhance the effluent treatment facility and the permeate is recycled to cooling tower as part make up. Occasionally, the treated effluent is used for green belt maintenance within the complex. Thus, zero effluent discharge is being maintained.
ii)	The water consumption shall not exceed 10135 m^3/day and the permission for drawl of same shall be obtained from concerned Department and a copy shall be submitted to the Ministry and its Regional Office at Bangalore within 3 months.	Completed. After revamp project, the water consumption shall not exceed 10135 m^3/day.
iii)	The project authorities shall install efficient air pollution control system like vibropriller to Urea Prilling Tower, low NOX burners to Reformer, Scrubbers and Ammonia Stripper etc. to control particulate and gaseous emissions from the plant to achieve the prescribed standards.	Vibropriller is already installed in Urea Prilling Tower. Ammonia Stripper for treatment of process condensate and Scrubbers to control particulate and gaseous emissions from process plants already exist. The particulate and gaseous emissions from process plants are within the standards prescribed by GSPCB, Goa. Modern design burners with lower NO_X emissions are installed in Reformer, Process Heaters and fired Boilers as part of revamp for Gas Conversion. The Revamp of Scrubbing system in NPK-A, B Plants has been completed with M/s INCRO, Spain's Two Stage Scrubbing and M/s Jacobs Dual Mole Scrubbing Technologies respectively.
iv)	The gaseous emissions (SO_2, NO_X, NH_3, Urea dust) & Particulate Matter from various process units shall confirm to the standards prescribed by the concerned authorities from time to time. Emission data shall be periodically monitored and reports submitted to Ministry's Regional Office, CPCB & SPCB.	Various process unit stack emissions monitoring is carried out by external laboratory recognized by MoEF for NH_3, Particulate Matter, SO_2 and NO_2 as per the conditions of Air Consent and the reports are being submitted to GSPCB, Goa once in every three months. The results conform to the standards prescribed by the Board. The compiled data for concerned period is being submitted to concerned RO-MoEF, ZO-CPCB and GSPCB, Goa as Annexure-A along with six monthly Compliance Status Reports.

v)	The Company shall undertake measures to reduce fugitive emissions especially of ammonia. The Company shall submit the Risk Assessment study report for the storage and handling of ammonia in the campus.	Completed. The fugitive emission reduction measures undertaken, as mentioned in the earlier status reports, are being practiced. This is an ongoing process. Further technology improvements in this direction are also being implemented.
vi)	The Company shall install the hooter system for leak detection of ammonia in the plant premises.	Completed. The hooter systems installed are being checked at periodic intervals and corrective measures required, if any, are being taken.
vii)	The proponent shall upload the status of compliance of the stipulated EC conditions, including monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant namely; SPM, RSPM, SO_2, NO_X (Ambient levels as well as stack emissions) or NH_3, indicated for the project shall be monitored and displayed at the convenient location near the main gate of the Company in public domain.	The Compliance Status Reports of EC conditions including results of monitored data are displayed on website and the same is being updated periodically. The earlier sixteen Compliance Status Reports were sent to concerned RO-MoEF, ZO-CPCB and GSPCB, Goa. The 18th Compliance Status Report is being submitted herewith. The compiled data of stack emission monitoring, ambient air quality monitoring, work zone monitoring and ambient noise level monitoring for the period October 2017 to March 2018 are being submitted herewith as Annexure – A,B, C and D respectively. All the results of monitoring conform to the respective standards prescribed. The PM-2.5, PM-10, SO_2, NO_2 and NH_3 are being monitored in ambient air twice a week on 24 hourly basis at four AAQM stations by an external laboratory recognized by MoEF. The reports are being sent to GSPCB, Goa every month and the results are being displayed and updated on electronic display boards at four different locations in public domain, which are already in existence before grant of EC. The process stack emission monitoring is carried out by an external laboratory recognized by MoEF for NH_3, Particulate Matter, SO_2 and NO_2 as per the conditions of Air Consent and the reports are being submitted to GSPCB, Goa once in three months. Stack emissions electronic display board is installed near gate no.1 which is in public domain and is already in operation since August 2010.
viii)	Spent catalysts shall be sold to authorized venders for its metal value. The other solid wastes shall be segregated and stored in the separate storage space and finally sold to the authorized vendors.	Being followed regularly.
ix)	As proposed the Company shall maintain the green belt covering 50% land area of the plant to mitigate the effect of fugitive emissions and noise as per the CPCB guidelines.	In 1973 when the Company began operation, the entire land was barren with very low coverage of vegetation. Over the last four decades in operation, through sustained efforts by our Estate Dept., a green belt covering approx. 50% total land area has already been developed and is being maintained.

x)	The Company shall implement all the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for fertilizer industries.	We have complied with all recommendations relevant to us made in "CREP for Fertilizer Industries" including the phasing out of use of Arsenic for CO_2 absorption system in Ammonia plant. During the annual shut down in April 2014, we have carried out "solution swap" wherein Arsenic based solution has been totally replaced with non-arsenic dual activator based GV solution. The discharged Arsenic bearing solution was disposed off in a scientific manner using Solidification and Stabilization process developed by NEERI, Nagpur and successfully implemented previously by us in the year 2004. We engaged NEERI as consultant for Solidification and Stabilization of the April 2014 lot of arsenic waste. In view of lower concentration of Arsenic compared to earlier waste, NEERI carried out a study and fine-tuned the earlier process. Consent from Goa State Pollution Control Board was received on 16.03.2016. The project was completed in February 2017.
xi)	Occupational health surveillance of the workers shall be carried out on a regular basis and records shall be maintained as per the Factories Act.	Being followed regularly.
xii)	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Implementation of our revamp/debottlenecking project of the existing plants involves minimal temporary manpower for which the necessary infrastructure and facilities are available at site and in the near vicinity. The required housing, necessary infrastructure and other facilities are provided to the construction labour.
	B. GENERAL CONDITIONS	
i)	The project authorities shall strictly adhere to the stipulations of the GSPCB / State Government or any Statutory body.	Stipulations of GSPCB / State Govt. or other Statutory Body are being complied on regular basis.
ii)	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Noted and will be complied, in case of deviations or alterations in project proposal.

iii)	At no time, the emissions shall exceed the prescribed limits. In the event of failure of any pollution control system adopted by the unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency has been achieved.	The process stack emission monitoring as well as ambient air quality monitoring is being carried out by a MoEF recognized external laboratory and the results have been within the prescribed limits. In case of failure of any pollution control system, the concerned plant is shut down, problem is identified, fault rectified and then only plant is started back after ensuring that the results are well within stipulations.
iv)	The locations of ambient quality monitoring stations shall be reviewed in consultations with State Pollution Control Board (SPCB) and additional stations shall be installed, if required, in the downwind direction as well as where maximum ground level concentrations are anticipated.	Four ambient air quality monitoring stations are already in operation even before the grant of EC. These were established at the locations recommended by CPCB after a proper technical study involving simulations for identifying the distance of maximum GLC of pollutants. The study by CPCB also took into account the human habitation areas like public schools while finalizing their recommendations. Post revamp, the simulation study by NEERI does not indicate any significant change in the pollutants level in ambient air as well as in the distance of max. GLC of pollutants.
v)	Dedicated scrubbers and stacks of appropriate height as per the CPCB guidelines shall be provided to control the emissions from various vents. The scrubber water shall be sent to ETP for further treatment.	Dedicated scrubbers are already provided before the emissions pass through the stacks and the scrubber water is totally recycled within the plants. The Revamp of Scrubbing system in NPK-A & NPK-B Plants have been completed. As part of revamp project, we have changed over the fuel from Naphtha/Furnace Oil to Natural Gas, which is a clean fuel with traces of Sulphur. With this change in fuel, SO_2 emissions have reduced drastically by about 98%. The heights of all the stacks are found to be appropriate and adequate as per CPCB guidelines.
vi)	The Company shall undertake following Waste Minimization measures a) Metering and control of quantities of active ingredients to minimize waste b) Reuse of by-products from the process as raw materials or as raw material substitute in other processes c) Use of "Closed Feed" system into batch reactors d) Venting equipment through vapour recovery system e) Use of high pressure hoses for equipment cleaning to reduce wastewater generation.	The waste minimization measures like metering, control of raw material usage by keeping close watch on specific consumption, reduction of effluent at source itself, reuse/recycle of treated industrial as well as domestic effluent in the process, use of ETP sludge in the process, use of high pressure hoses for cleaning of equipment etc. are being practiced regularly.

vii)	Fugitive emissions in the work zone environment, product, and raw material storage area shall be regularly monitored. The emissions shall conform to the limits imposed by SPCB/CPCB.	The work zone environment in process plants, product and raw material storage areas at different locations is being monitored for Ammonia once in three months and records are being maintained. The results conform to the limits prescribed under The Factories Act. The compiled data is being submitted to concerned RO-MoEF, ZO-CPCB and GSPCB, Goa as Annexure-C along with six monthly Compliance Status Reports.
viii)	The project authorities shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as amended in October 1994 and January 2000 and Hazardous Waste (Management and Handling) Rules, 1989 as amended from time to time. Authorization from the SPCB shall be obtained for collection, treatment, storage, and disposal of hazardous wastes.	Authorization from GSPCB, Goa for collection, storage and disposal of Hazardous Wastes is already obtained before grant of EC and is being renewed regularly. The provisions under MSIHC Rules and HW Rules under EP Act are being complied on regular basis. Also, we are disposing off our E-waste in accordance with the E-waste (Management) Rules, 2016.
ix)	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	Noise control measures and PPE for operating personnel are provided. The ambient noise level at the factory periphery at different locations in all directions is being monitored once in three months and records are being maintained. The results conform to the standards prescribed under Noise Pollution (Regulations and Control) Rules, 2000 under EP Act and Rules. The compiled data is being submitted to concerned RO-MoEF, ZO-CPCB and GSPCB, Goa as Annexure-D along with six monthly Compliance Status Reports.
x)	The Company shall develop rain water harvesting structures to harvest runoff water for recharge of ground water.	Rain water harvesting for storage in the form of captive lake of 235 MG capacity already exists since inception of factory way back in 1973. We have signed an agreement with WRD, Govt. of Goa in March 2014 for supply of raw water which has already commenced and with improved water supply in adequate quantity; we have stopped usage of all the Bore wells thus eliminating the drawl of groundwater.

xi)	The Company shall undertake eco-development measures including community welfare measures in the project area for the overall improvement of the environment. The eco-development plan should be submitted to the SPCB within three months of receipt of this letter for approval.	During its operation for last four decades, the Company has already undertaken many eco-development measures like afforestation, creation and maintenance of green belt around the factory premises etc. The Company has also undertaken community welfare measures like maintenance of public gardens in Vasco city, awarding scholarships, providing skills training to local youth in domestic Electrician, Data Entry, and Tailoring, conducting health camps, supply of safe drinking water to nearby villages, creation of self-help groups, assistance to the present self-help groups, cleanliness drive, distribution of free saplings as a part of tree plantation drive etc. as part of Corporate Social Responsibility Schemes. Report on "Eco-development plan and Community Welfare Measures" already undertaken by the Company is submitted to GSPCB, Goa.
xii)	The project proponent shall also comply with all the environmental protection measures and safeguards proposed in the EIA / EMP report.	As proposed in EIA / EMP report, environmental protection measures and safeguards are being implemented as part of execution of revamp for gas conversion. As part of revamp in Ammonia & Utilities plants, we have changed over fuel/feed from Naphtha/Furnace Oil to much cleaner NG/RLNG. We have also installed low NO_X burners in Heaters and Boilers. We have replaced Furnace oil as fuel to Natural gas in the Hot Air Generator of NPK-A and NPK-B Plants.
xiii)	A separate Environmental Management Cell equipped with full fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	Zuari is an existing Company in operation for over four decades. A full fledged laboratory with necessary facilities already exists for carrying out analysis and monitoring. Stack emission and ambient air quality monitoring is outsourced to MoEF approved external laboratory as stipulated by GSPCB, Goa. A person of General Manager level is in-charge of overall environmental management functions and he is ably assisted by a dedicated Environment Engineers. The plant section heads in line function also contribute directly to environment management. The "Central Environment Council" which has all senior managers as its members, meets every month to discuss & take decisions on environment management issues.
xiv)	The project authorities shall earmark adequate funds to implement the conditions stipulated by the MoEF as well as the State Govt. along with the implementation schedule for all the conditions stipulated herein. The fund so provided shall not be diverted for any other purpose.	Approximately Rs.35 crores for capital investment has been earmarked for implementing EC conditions and environment protection measures and Rs.2.5 crores/annum has been earmarked to take care of recurring cost. Till date, Rs. 47.16 crores as Capital Investment and a recurring cost of around Rs. 2.23 Crores has been spent.