FORM - V

Environmental Statement for the financial year ending 31st March, 2010

PART – A

(i) Name and Address of the Owner / Occupier of the Industry, Operation or Process

Mr. H.S.Bawa
Managing Director
Zuari Industries Ltd.
(Fertilizer Division)
Jaikisaan Bhawan
Zuarinagar – 403 726
Goa

(ii) Industry Category ----- Primary – (STC Code) / Secondary – (SIC Code)

Chemical Fertilizer Industry (Nitrogenous and Complex Grades)

(ii) Production Capacity – Units

Sr. No.	Product	Installed Capacity MT/ Day	Actual Production for 2009-10, MT
1	Ammonia *	660	2,26,689
2	Urea	1140	3,87,825
3	Complex Grades in NPK-A plant	1100	3,44,709
4	Complex Grades in NPK-B plant	1100	3,73,961
5	Liquid Argon	6600 SM3/Day	NIL

(***** Intermediate Product used for captive consumption)

(iv) Year of establishment

1967 (Actual commercial production started in 1973)

(v) Date of the last Environmental Statement submitted

June 11, 2009

PART – B

Water and Raw Material Consumption

(i) Water Consumption **M3 / Day** (Based on typical water balance at Avg. plant loads)

Process	3470 *
Cooling	5630
Domestic	470
Total	9570 **

(* includes Boiler feed water make up, Treated water etc.)
(**excludes Avg. colony water supply of about 400 M3 / Day)

Name of Products	**Process water consumption per unit of product output**	
	During the previous financial year 2008-09	**During the current financial year 2009-10**
Urea	7.95 M3 / MT	7.21 M3 / MT
Complex Grades in NPK-A plant	0.27 M3 / MT	0.22 M3 / MT
Complex Grades in NPK-B plant	0.29 M3 / MT	0.30 M3 / MT

(* Process water consumption requirement of NPK-A and B plants is met by recycling the effluent/ waste water from Effluent Treatment Plant)

(i) Raw Material Consumption

Name of Raw Material *	**Name of Products**	**Consumption of Raw Material per unit of Output (MT/MT)**	
		During the previous financial year 2008-09	**During the current financial year 2009-10**
Naphtha (includes Fuel Naphtha also)	Ammonia (Intermediate product for captive consumption)	0.846	0.845
Ammonia CO2	Urea	0.580 0.754	0.580 0.756

Name of Raw Material *	Name of Products	Consumption of Raw Material per unit of Output (MT/MT)	
		During the previous financial year 2008-09	During the current financial year 2009-10
Ammonia Urea P2O5 Potash H2SO4 Filler	19:19:19 grade (Sampurna)	0.087 0.260 0.189 0.323 0.020 0.024	This grade was not produced during the year.
Ammonia Urea P2O5 Potash H2SO4 Filler	18:46:00 grade (Samrat)	0.206 0.009 0.461 ----- 0.033 0.057	0.223 ----- 0.462 ----- 0.056 0.053
Ammonia Urea P2O5 Potash H2SO4 Filler	10:26:26 grade (Samarth)	0.123 ----- 0.261 0.441 0.016 0.058	0.124 ----- 0.261 0.439 0.009 0.065
Ammonia Urea P2O5 Potash H2SO4 Filler	12:32:16 grade (Sampatti)	0.147 ----- 0.320 0.272 0.021 0.066	0.147 ----- 0.322 0.272 0.017 0.071
Ammonia Urea P2O5 Potash H2SO4 Filler	20:20:00 grade (Sampanna)	0.247 ----- 0.205 ----- 0.442 0.004	0.247 ----- 0.205 ----- 0.465 0.004

(* Industry may use codes if disclosing the details of raw materials would violate contractual obligations, otherwise all industries have to name the raw materials used)

PART – C

Pollution discharged to Environment / Unit of Output

(Parameters as specified in the consent issued)

Pollutants	Quantity of pollutants discharged (mass / day) Kg / Hr *	Concentration of pollutants in discharge (mass / vol.) Mg / M3 *	Percentage of variation from prescribed standards with reasons
(a) Water	NIL	NIL	N.A
(b) Air			
i) Particulate Matter from Prilling Tower – Urea plant	---	47.54	Less by 68.31%
ii) Particulate Matter from Dust Separator – Urea plant	---	45.32	Less by 69.79%
iii) Ammonia from Off Gas Absorber – Urea plant	1.3	---	Less by 87%
iv) Ammonia from Amm. Recovery Absorber – Urea plant	2.05	---	Less by 79.5%
v) Ammonia from Fumes Stack – NPK-A plant	1.34	---	Less by 86.6%
vi) Particulate Matter from Dryer Stack – NPK-A plant	---	51.23	Less by 65.85%
vii) Particulate Matter from Dedusting Stack – NPK-A plant	---	43.38	Less by 71.08%
viii) Ammonia from NPK-B Stack	4.67	---	Less by 53.3%
ix) Particulate Matter from NPK-B Stack	---	59.14	Less by 60.58%
x) SO2 from Boiler Stack	358.79	---	Less by 56.88%
xi) Particulate Matter from Boiler Stack	---	96.69	Less by 35.54%
xii) SO2 from DG Set stack	10.17	---	Less by 90.37%
xiii) Particulate Matter from DG Stack	---	61.69	Less by 58.87%
xiv) NOX from DG Stack	---	77.18 ppm	Less by 92.98%
xv) NMHC from DG Stack	---	4.67	Less by 96.87%
xvi) CO from DG Stack	---	6.06	Less by 95.96%

(* Annual average values expressed at 25 deg. Centigrade, Atm. Pr. & 0 % moisture)

PART – D

Hazardous Waste

[As specified under Hazardous Waste (Mgt. & Handling) Rules, 2008]

Hazardous Waste	Total Quantity	
	During the previous financial year 2008-09	During the current financial year 2009-10
(a) From Process		
(i) Used / Spent Oil under H.W. Category No.5.1	27.09 MT	16.02 MT
(ii) Spent Catalyst under H.W.Category No.18.1	56.92 MT	NIL
(iii) Furnace Oil Tank cleaning sludge under H.W.Category No.3.1	NIL	NIL
(b) From pollution control facilities		
(i) ETP sludge under H.W.Category No.34.3	27 MT	25 MT
(c)(i) Quantity recycled / reused within Unit	27 MT ETP sludge	25 MT ETP sludge
(ii) Sold (used/spent Oil)	27.09 MT	16.02 MT
(iii) Sold (Spent Catalyst)	56.92 MT	NIL
(iv) Sold (Furnace oil Tank cleaning residue)	NIL	NIL

PART – E

Solid Wastes

Solid Waste	Total Quantity	
	During the previous financial year 2008-09	During the current financial year 2009-10
(a) From Process		
(i) DM plant resin material	Approx. 0.5 M3	Approx. 5.0 M3
(ii) Sand from filters	Approx. 3.0 M3	Approx. 10.0 M3
(iii) Activated carbon from filters	Approx. 0.5 M3	NIL
(b) From pollution control facilities		
(i) STP Sludge	Approx. 4.0 M3	Approx. 8.0 M3
(c) (i) Quantity recycled / reused within unit	NIL	NIL
(ii) Quantity Sold	NIL	NIL
(iii) Disposed (Resin material, Sand, Act. Carbon & STP sludge)	Approx. 8.0 M3	Approx. 23.0 M3

PART – F

Please specify the characterizations (in terms of composition and quantum) of Hazardous as well as Solid Wastes and indicate the disposal practice adopted for both these categories of wastes

Waste	Composition	Disposal Practice adopted
Hazardous Waste		
Used / Spent Oil	Used Oil	Sold to CPCB registered and SPCB Authorized Vendors/Recyclers only for reprocessing.
Furnace Oil Tank sludge & cleaning residue	Oil sludge & cleaning residue	Sold to CPCB registered and SPCB Authorized Vendors/Recyclers only for reprocessing.
Spent Catalyst	Spent catalyst containing metals/oxides like Ni, Cu, Zn, Fe, Co, Mo etc.in different composition	Sold to CPCB registered and SPCB Authorized Vendors/Recyclers only for reprocessing.
ETP Sludge	Amm./Urea nitrogen, Phosphate, Sulphate, KCl, Salts of Na, Ca, Mg & Suspended solids	Recovered into process as recycle along with filler material in NPK-A and NPK-B plants
Solid Waste from Process		
DM plant resin material	Water insoluble co-polymers	Used along with backfilling material for structure / building foundation, road construction etc.
Sand from filters		Used along with backfilling material for structure / building foundation, road construction etc.
Activated carbon from filters	Carbon material	Used along with backfilling material for structure / building foundation, road construction etc.
STP Sludge	Organic matter	Used as bio-fertilizer for trees in our green belt.

PART – G

Impact of pollution abatement measures taken on conservation of natural resources and on cost of production

Pollution control measures are an integral part of our processes and every effort is made to reduce the amount of effluent/emission and waste generation in the manufacturing process & associated activities. This has resulted in reduction of consumption of water, raw materials and energy over a period of time. This has also resulted in reduction of effluent/emission generation at source itself and in re-use/recycling/recovery of nutrients from the effluent/wastes. Ultimately all these measures have certainly added to the conservation of natural resources and cost savings. However, the exact impact of this on cost of production is difficult to quantify and thus is intangible.

PART – H

Additional measures / Investment proposal for Environmental Protection including abatement of pollution, prevention of pollution

(i) Several Energy savings measures implemented over last few years have reduced the specific energy consumption of Urea which has reduced Furnace Oil consumption in our Utility Boilers and hence reduced the emissions. Every year some energy saving measures are implemented.

(ii) We have initiated the process of installation of a Reverse Osmosis unit for additional treatment and recovery of our wastewater/effluent.

(iii) We have initiated the process of revamping the Ammonia plant for changeover of feedstock and fuel from Naphtha to Natural Gas/Regassified Liquid Natural Gas and reduction of specific energy consumption and also changeover of fuel from Furnace oil to NG/RLNG in Utilities boilers. The revamp process may get completed by 2012 after which the emission levels of CO2, SO2 and NOX will reduce substantially.

(iv) We have initiated the process of revamping of our scrubbing system in NPK-A and NPK-B plants for further reduction of the emission levels. The technical study by our Consultant is in progress.

(v) During the revamp/debottlenecking, a capital investment of approx. Rs.10.15 Crores has been earmarked for implementing the schemes meant for protection of environment.

(vi) Risk Assessment study for storage and handling of ammonia at the plant site of Zuari Industries Ltd, Zuarinagar, Goa was carried out by our Consultant NEERI, Nagpur in October 2009.

(vii) Reliable Ammonia sensors already exist in Ammonia/Urea and Ammonia storage/handling plants for leak detection and alarms are provided in respective control rooms. A new hooter system was procured and installed at strategic locations in plants during the March 2010 annual turnaround. System checked, tested and commissioned.

(viii) Survey was carried out to identify the sources of fugitive ammonia emissions like valve gland leaks, pump seal leaks, flange leaks etc. All these sources were attended during the annual turnaround in March 2010 for reducing the fugitive ammonia emissions.

(ix) Rain water harvesting for storage in the form of captive lake of 235 MG capacity already exists. Additional measures for rain water harvesting consisting of ground water recharge structures and mini artificial aquifer recharge structures for recharge of ground water around factory premises are implemented in October/November 2009.

(x) During its operation for last 35 years, Zuari Industries Ltd. 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 providing land for sulabh toilets for general public in the neighborhood, development of neighboring govt. school playground, maintenance of public gardens in Vasco city, beautification of highway road divider etc as part of Corporate Social Responsibility Schemes. A report on "Eco-development plan and Community Welfare Measures" was prepared and submitted to GSPCB in March 2010.

PART – I

Any other particulars for improving the quality of Environment

(i) Regular monitoring of process stack emissions once in a month and regular monitoring of ambient air quality around the complex at four strategic CPCB identified locations twice a week by an accredited MoEF recognized laboratory is being carried out. The results of stacks as well as ambient air quality monitoring are well within the standards prescribed by CPCB/SPCB. The monitored results are also displayed on electronic display boards located in public domain.

(ii) Work zone environment monitoring for ammonia and noise at various locations inside the factory premises and the ambient noise level at different locations around factory premises is carried out. The results of monitoring conform to the limits prescribed.

(iii) All the wastewater generated within the factory premises is given primary treatment and then recycled to either NPK-A and NPK-B plants for process use or to cooling towers as part make up water. The domestic effluent is treated in Sewage Treatment

Plant and the treated domestic effluent is totally recycled to cooling towers as make up. Zuari Industries Ltd, Goa continues to maintain zero effluent discharge status.

(iv) Every effort is made to reduce the generation of effluent/emission/wastes at the source itself and to explore the possibility of reusing/recycling of the wastes that are generated.

(v) Hazardous Wastes like used/spent oil, furnace oil tank sludge/cleaning residue and spent catalysts that are generated are stored separately and sold to only those Vendors registered with CPCB as Recyclers and having Consents/Authorization from State Pollution Control Boards.

(vi) Other solid materials like product spillages, off specification products, acid tank sludge and ETP sludge are recycled back to process directly or along with the filler material in NPK-A and NPK-B plants.

(vii) Efficient and effective management of cooling water quality control program for operating the cooling towers at higher cycles of concentration to reduce the generation of cooling tower blow-down effluent.

(viii) Effluent storage ponds like acidic/alkali effluent ponds at Water Treatment Plant, Settling ponds/Holding pond/Guard pond at Effluent Treatment Plant are regularly cleaned, inspected, repaired if required and chemically resistant epoxy coated from inside to avoid any seepage.

(ix) Naphtha/Ammonia/Chlorine sensors are installed at strategic locations inside the plant premises for early detection of any leak and corrective measures. These sensors are regularly checked for proper functioning.

(x) Regular generation of meteorological data like wind speed, wind direction, temperatures and wind rose diagrams by maintaining thermo-hydrograph and data logger.

(xi) As is the practice every year, tree plantation drive is carried out during monsoon. More area around the factory complex is being developed as green belt and saplings of various plants are distributed to the neighboring villagers free of cost.

(xii) Maintenance of approx. 260 hectares of green belt around the factory complex to mitigate the effect of fugitive emissions and noise as per CPCB guidelines.

(xiii) Zuari is in operation for over 35 years. A full fledged laboratory with necessary facilities is created for carrying out analysis and monitoring. Stack emission and ambient air quality monitoring is carried out by MoEF recognized external laboratory as stipulated by GSPCB. A person of Chief Manager level is dedicated to be in-charge of overall environmental management functions.