

EXECUTIVE SUMMARY

OF

**RAPID ENVIRONMENTAL IMPACT
ASSESSMENT REPORT**

FOR

M/s. HI – TECH CARBON
(A UNIT OF ADITYA BIRLA NUVO LTD)

CHLOR-ALKALI UNIT

AT

VILLAGE TALVALI AND LOHOP, TAL: KHALAPUR,
DIST : RAIGAD

PREPARED BY

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EXECUTIVE SUMMARY

1. INTRODUCTION :

This is a proposal to establish a new activity in the existing industry. This proposal is mainly for three simultaneous standard products viz, Caustic Soda Lye, Chlorine gas – Liquid Chlorine, Hydrogen Gas. Other products are produced to reduce the negative impacts viz. Poly Aluminum chloride, Stable Bleaching powder, Chlorinated paraffins

The Proponents are M/s Hi Tech Carbon (A Unit of Aditya Birla Nuvo Limited at Sr. No. 29,30,32 30/2, 36/1,37A/24,37A/27,39/12,44/10,44/12,44/14B from Talavali Village. The Notification no. S. O. 1533 promulgated on 14th September 2006 (and its subsequent version of 1st December 2009) has covered this type of industries. The Form I is submitted generally covering Justification.

The proposed products are :-

#	Products	Unit	Capacity
1	Caustic soda lye	TPD	350
2	Chlorine Gas- Total	TPD	315
	Liquid Chlorine	TPD	250
	Hydrochloric acid- 100% Basis	TPD	50
	Sodium Hypo Chlorite – 100% basis	TPD	15
3	Hydrogen	NM3/day	98000
4	Polyaluminium chloride liquid	TPD	200
5	Stable Bleaching Powder	TPD	75
6	Chlorinated Paraffin	TPD	50

Table No.1: Proposed Production

2. JUSTIFICATION:

Development needs various chemicals. Chlorine is the indicator for the development of the nation. Caustic is a merchant chemical used in various applications. Per capita consumption of chlorine in India is just 1.85 Kgs as against 13 Kgs in China. This indicated the need for the growth of this industry. Aditya Birla Group Chemical Business has been producing the chlor-alkali and allied products at various locations for the last 35 years and has attained the expertise in manufacturing, handling and selling.

Justification can be seen from the wide application of main two products as –

1. Caustic soda: Soaps and Detergent Industry, Pulp and Paper Industry, Textile, Processing Industry, Dyes and Dyestuff Industry, Plastic Polymers, Rayon Grade Pulp, Pharmaceuticals, Electroplating.
2. Liquid Chlorine: Used in the manufacturing of paper, Aluminum Chloride and other chemicals. It has export potential also. It is used in disinfection of drinking water, pharmaceutical industry. 85% of the pharmaceuticals rely on Chlorine Chemistry including medicines that treat heart disease, cancer, AIDS. Chlorine tablets are also used by public health workers in rural areas.

3. LOCATION:

The government has a desire to improve status of this District.

This site of about 7.2 ha, has a connecting road and has approachability. This site is connected with Maharashtra State Electricity Board power. This site is on the adjoining campus of the MIDC means safe transportation, less need of roads. The existing infrastructure of Hi-Tech Carbon will be useful.

There is no sensitive establishment in the vicinity such as health resort, hospital, archaeological monuments, sanctuaries, etc. The land comes under the geography of Talvali and other villages. are away.

With all this consideration, this site was adopted.

4. RESOURCES:

Raw Materials Input :

Major Raw Materials

For manufacture of caustic soda. Liquid Chlorine, Hydro Chloric Acid and Sodium Hypo Chlorite

S,no	Name	Unit	Quantity
1	Salt	TPA	201588
2	Barium Carbonate	TPA	1890
3	Soda Ash	TPA	630
4	Alpha Cellulose	TPA	31
5	Caustic soda	TPA	3150
6	Hydrochloric acid	TPA	6300
7	Sodium Bi Sulphite	TPA	126
8	Coagulant	TPA	26

2. For manufacture of Stable Bleaching Powder:

S,no	Particulars	Unit	Quantity
1	Hydrated lime	TPA	21600
2	Liquid Chlorine	TPA	10800

3. For manufacture of Polyaluminum chloride:

S,no	Particulars	Unit	Quantity
1	Alumina Hydrate	TPA	18000
2	Hydrochloric acid	TPA	18000
3	Liquid Aluminium chloride	TPA	5400

4. For manufacture of Chlorinated Paraffins:

S,no	Particulars	Unit	Quantity
1	Normal Paraffins	TPA	10800
2	Liquid chlorine	TPA	23760

Table No. 2: Raw Material

These raw materials are available to us from reliable & assured sources.

Out of these twelve, eleven are indigenous and only one is imported. For this we have good arrangements in Germany.

Utilities

Power: The power generated from the waste heat of High tech plant. The additional power required is sourced from the MSEB.

DG Set: Standby of 1825 KVA is already available.

Water: The water requirement is about 2 MLD for domestic, greenery, process and quenching cooling purposes. The source of water is already available for existing unit.

Manpower: For the expansion additional 150 workers, 50 Supervisory and 50 management staff members will be required.

5. PROCESS :

Caustic Soda

The caustic soda lye is manufactured by electrolysis of brine (sodium chloride solution of concentration 310 gpl). For satisfactory operation high purity of brine is required. Brine is recycled continuously and the cycle consists of the following steps:-

Brine Saturation

Brine Purification

Brine Settling, Filtering, Polishing

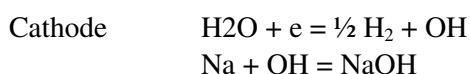
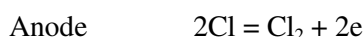
Secondary Brine Purification (Ion Exchange)

After treatment in above steps, the brine is feed into the anode chamber of electrolyser cells. Uniform distribution of brine is ensured.

Cl₂ is liberated at the anode surface and the brine in the anode chamber is depleted to about 200 – 220 gpl.

As a result of electrochemical reactions taking place in the cathodic chamber, H₂ and OH are generated at the cathode surface. A two phase mixture of 33% NaOH and Hydrogen overflows from the cathode chamber.

The electrochemical reactions in the cell are as follows:



The process safety is ensured through elaborate process control, instrumentation and atomization. The unsafe conditions are thus avoided and various emergency plant stoppage methods have been incorporated in the plant design, to have safe plant operation.

The other downstream products have a controlling chemistry as –

No	D/s Product	Controlling Reaction
1	Stable Bleaching Powder	$\text{Ca(OH)}_2 + \text{Cl}_2 = \text{CaOCl}_2 + \text{H}_2\text{O}$
2	Poly Aluminium Chloride	$2\text{Al(OH)}_3 + 3\text{HCl} = \{\text{Al}_2(\text{OH})_3\text{Cl}_3\}_m + 3\text{H}_2\text{O}$. (with m = 1 to 15)
3	Chloro Sulphonic Acid	$\text{HCl} + \text{SO}_3 = \text{ClSO}_2\text{H} + \text{Heat}$
4	Chlorinated Paraffin	$\text{C}_m\text{H}_n + x\text{Cl}_2 = \text{C}_m\text{H}_y\text{Cl}_x + \text{Heat}$
5	Aluminium Chloride	$2\text{Al} + 3\text{Cl}_2 = 2\text{AlCl}_3$

Table No.3: Controlling Chemistry

6. POLLUTION CONTROL

Water Budgeting:

Water input and effluent generation can be summarized as:

No	Use Station	Input CMD		Loss	Effluent CMD	
		Fresh	Recycled		Recycled	CETP
1	Domestic	75	-	15	60	
2	Cooling	800	-	750	50	
3	Process	1000	-	850		150
4	Greening	125				
	Sub Total	2000	110	1850	110	150
	Total	2110		1850	260	

Table No.4: Water Budgeting

The effluent mainly is generated from the caustic soda plant utilities that consists of cooling water of accessory equipments.

Waste Water Treatment:

There are many sections in this unit each section will have a collection pit for maximizing reuse within the section itself. The small leftover will be collected and then will undergo initial primary treatment for removal of suspended solids and maintaining pH value. This will be done through equalization, neutralization, flocculation, clarification and filtration. Thereafter two alternate modes for further treatment may be sought for, which are mentioned as Options – I & II.

- Option 1 is pumping to CETP.
- Option 2 is to treat by us further by AWWT (Advance Waste Water Treatment) employing Reverse Osmosis. Permeate is fit for reuse and the concentrate after drying is fit to go to Common CHWTSDF.

In both the options finally there is no effluent left unattended.

Probable quality of Waste Water after-treatment in respect of the following parameters (in mg/l except pH):

(All values in mg/Lt except pH)

Parameters	Norms	Treated effluent Quality
PH	5.5 – 9.0	6.0 – 8.0
Suspended Solids	100	70 – 80
BOD	30	20 – 25
COD	250	180 - 200

Table No. 5: Treated Effluent Characteristics

Disposal: (1)The disposal will be for greenery within the premises or immediate outside.

(2)CETP domain with nil discharge of effluent outside.

This is a zero Discharge Industry.

AIR POLLUTION :

The air pollution caused by this industry is mainly from dust as SPM and fumes. The dust is due to the composition and handling of raw material and fumes are both from handling and process. The efforts taken by the Industry in this respect are indicated.

The concept is by way of bag filters for SPM and different types of scrubbers for gases and SPM. These will be in every plant section in the vicinity. Thus –

The system will be carefully run because the removed pollutants are useful to us again.

1	Alkali Scrubber in main plant, Bleach plant & AlCl ₃ plant	Bleach liquor
2	Water Scrubber main plant & CS Acid plant & CP Plant	HCl
3	Water Scrubber PAC plant	PAC formulation

Table No.6: removed pollutants

Proposed Stack Details:-

Sr. No.	Plant	Height (m)	Diameter (m)	Flow (m ³ hr)
1.	Chlorine Stack	35	0.3	400
2.	HCl Stack	35	0.3	400

Table No.7: Proposed Stack Details

SOLID WASTE

(a) Non Hazardous Solid Waste:

Based on above working, the summary

Sr. No.	Waste	Quantity TPM	Treatment	Disposal	Remark
1	Canteen	0.9	Compost	Own garden	Organic
2	Colony GH	0.2	Compost	Own garden	Mixed
3	Sewage treatment plant sludge	0.5	Treated	Own garden	Organic, Non-Haz
4	Office	0.4	--	Sales	Non-Haz.
5	Packing Sec.	0.6	--	Sales	Non-Haz.

Table No. 8: Non Hazardous Solid Waste

(b) Hazardous Waste:

Hazardous Solid waste is governed by Hazardous Waste (Management & Handling) Rules of 1989 as amended in 2008. The H. W. amendment is promulgated in 2008. It defines Hazardous Waste on a basis of different criteria. This is examined

Sr. No.	Waste	Source	Quantity	Disposal method
1	Brine sludge/other process sludge's during cleaning and maintenance	Brine purification process	10 TPD	Common TSDF site
2	Exhausted resin	Brine purification process	0.10 TPA	Common TSDF site
3	Spent carbon (from filters)	Brine purification process	0.10 TPA	Common TSDF site
4	Used oil	Rotating equipments	30 KL / A	Sold to CPCB authorized recycler
5	ETP sludge	Effluent treatment plants	5 TPA	Common TSDF site
6	Exhausted membranes	Electrolyzer	As requirement per	Common TSDF site

Table No. 9: Hazardous Waste:

Noise

All measures to minimize Noise level will be taken to keep Noise level well below the stipulated Noise Standards in and around the plant premises with the help of various Pollution Control Devices i.e., Silencers in vents, Isolation of Equipment, Encasing of Blowers, Separate cabins for Operators and Regular Preventive Maintenance of rotating machines, besides the personal protective equipment like Ear Plug Provided, Ear Muff.

- Precautions also are design for greening drive and rainwater harvesting which helps for mitigations

7. Background Study:

This is important part of study.

(A) Natural Environment:

The proposal for sampling was –

- Surface Water: 3 Locations, 11 Parameters.
- Ground Water: 3 Locations, 11 Parameters.
- Air Quality: 3 Months, For PM 2.5, PM 10, SO_x and NO_x.
- Noise: 9 Locations.

The stations are selected in all the eight directions from the factory and in 10 km radius. It is generally found that

- Ambient Air Quality satisfies the CPCB norms.
- Surface Water quality is satisfactory.
- Ground Water Quality is satisfactory.
- Aesthetics like odor, noise are safe.

(B) Manmade environment

This includes existing land-use, demography, employment, socio-economic aspects and community development needed and proposed.

- Socio-Economic Status in Influence Zone found in the study of Non-Workers percentage is very high, from the percentage employed population on Agricultural, is more, low scope for other avenues of livelihood like Live Stock, Forestry, Fishing, Hunting, Orchards, Mining, Trade Commerce.
- Further Out of Total Land high percentage is already under Cultivation.
- If the land is not likely to support more people, then Industrialization is necessary to improve the situation.

8. Safety

Safety and Occupational Health will be dealt carefully. A disciplined approach is natural to this industry. Safety policy will be in place. The unit will be Registered under Factory Act and are bound by State Factory Rules. Thus, First aid trained and Fire-fighting trained person will be available in every shift. Safety Officer will be appointed, as also the competent person retained. Where necessary, provisions of other Acts, where required like Petroleum act, etc. will be obeyed. Fire fighting system is kept as per norms of Insurance Company and CIF.

DMP (Disaster Management Plan) and On-site emergency plan will be in place. Accordingly, Personal protection equipment will be given and use will be insisted. Consulting Physician is retained to attend the factory.

Safety measures are considered in storage and in transportation as well.

9. Conclusion:

This industry will manufacture chemicals which are in good demand for growing infra-structural facilities in India. This will not disturb the present land use because our area occupied will be only small % of Influence zone 10 km. and is already industrial use.

Compatible Architecture will be adopted and No Prime Agriculture Land will be put to this industrial use. This land is already under Industrial use. Trees will be maintained and not razed down. There will be no problematic waste materials as unattended. Safety aspect is fully considered.

- This project is very necessary in view of making useful material available to Indian developmental activity for community, defense and as a foreign exchange saver product.
- The candidate site is suitable from general MoEF expectations.
- Water, power, Raw material, and Market is assured and found available with ease.
- Full precautions will be taken for Pollution Control, Resource Conservation and Environmental Protection.
- This is cost effective and Sustainable Development.

The Report gives the details and finds that the impact overall is favorable to us.