



सत्यमेव जयते

**File No.: 2024/TOR/E/18**  
**Government of India**  
**Ministry of Environment, Forest and Climate Change**  
**(Issued by the State Level Expert Appraisal Committee(SEAC),**  
**PUNJAB)**

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Dated 13/03/2024



To,

Harjeet Singh Sandhu  
BODAL CHEMICALS LIMITED  
Village-Khadauli/Sardargarh, Rajpura, Patiala-140401, Damanheri, PATIALA, PUNJAB, 140401  
rksharma@bodal.com

**Subject:** Grant of Standard Terms of Reference (ToR) to the proposed Project under the EIA Notification 2006- and as amended thereof-regarding.

**Sir/Madam,**

This is in reference to your application submitted to SEAC vide proposal number SIA/PB/IND3/464782/2024 dated 04/03/2024 for grant of Terms of Reference (ToR) to the project under the provision of the EIA Notification 2006-and as amended thereof.

2. The particulars of the proposal are as below :

(i) ToR Identification No.	TO24B1602PB5595385N
(ii) File No.	2024/TOR/E/18
(iii) Clearance Type	Fresh ToR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	4(d) Chlor-alkali industry
(vii) Name of Project	Expansion of the existing Chloro Alkali Plant for increase in the production capacity of Caustic Soda from 250 TPD to 300 TPD and other products correspondingly by M/s BODAL CHEMICALS LIMITED located in the revenue estate of Village-Khadauli/Sardargarh, Rajpura, Patiala-140401
(viii) Name of Company/Organization	BODAL CHEMICALS LIMITED
(ix) Location of Project (District, State)	PATIALA, PUNJAB
(x) Issuing Authority	SEAC
(xii) Applicability of General Conditions	NO

3. The SEAC has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification,

2006 & further amendments thereto and after detailed examination hereby decided to grant Standard Terms of Reference to the instant proposal of **M/s. BODAL CHEMICALS LIMITED** under the provisions of the aforementioned Notification.

4. The brief about products and by products as submitted by the Project proponent in Form-1 (Part A, B) and Standard Terms of Reference are annexed to this letter as Annexure (1).
5. The Ministry reserves the right to stipulate additional TORs, if found necessary.
6. The Standard Terms of Reference (ToR) to the aforementioned project is under provisions of EIA Notification, 2006 and as amended thereof. It does not tantamount to approvals/consent/permissions etc required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
7. The granted letter, all the documents submitted as a part of application viz. Form-1 Part A and Part B are available on PARIVESH portal which can be accessed by scanning the QR Code above.

**Copy To**

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**Annexure 1**

**Standard Terms of Reference for conducting Environment Impact Assessment Study for Chlor-alkali industry and information to be included in EIA/EMP report**

**1. Executive Summary**

Sr. No.	Terms of Reference
1.1	Executive Summary

**2. Introduction**

Sr. No.	Terms of Reference
2.1	Details of the EIA Consultant including NABET accreditation
2.2	Information about the project proponent
2.3	Importance and benefits of the project

**3. Project Description**

Sr. No.	Terms of Reference
3.1	Cost of project and time of completion.
3.2	Products with capacities for the proposed project.
3.3	If expansion project, details of existing products with capacities and whether adequate land is available for expansion, reference of earlier EC if any.

Sr. No.	Terms of Reference
3.4	Details of existing products and production, if any, along with present product/production details in tabular format, to verify the compliance of the EIA Notifications.
3.5	List of raw materials required and their source along with mode of transportation.
3.6	Other chemicals and materials required with quantities and storage capacities
3.7	Details of Emission, effluents, hazardous waste generation and their management.
3.8	Requirement of water, power, with source of supply, status of approval, water balance diagram, man-power requirement (regular and contract)
3.9	Details of boiler/gensets (including stacks/exhausts) and fuels to be used
3.10	Process description along with major equipment's and machineries, process flow sheet (quantitative) from raw materials to products to be provided
3.11	Hazard identification and details of proposed safety systems.
3.12	<p>Expansion/modernization proposals:</p> <p>a. Copy of all the Environmental Clearance(s) including Amendments thereto obtained for the project from MOEF/SEIAA shall be attached as an Annexure. A certified copy of the latest Monitoring Report of the Integrated Regional Office of the Ministry of Environment, Forest and Climate Change as per circular dated 30th May, 2012 on the status of compliance of conditions stipulated in all the existing environmental clearances including Amendments shall be provided. In addition, copy of the latest CTO and status of compliance of Consent to Operate for the ongoing/existing operation of the project from SPCB shall be attached with the EIA-EMP report.</p> <p>b. In case the existing project has not obtained environmental clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification 2006 shall be provided. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted. Further, compliance report to the conditions of consents from the SPCB shall be submitted.</p>

#### 4. Site Details

Sr. No.	Terms of Reference
4.1	Location of the project site covering village, Taluka/Tehsil, District and State, Justification for selecting the site, whether other sites were considered.
4.2	A topo-sheet of the study area of radius of 10km and site location on 1:50,000/1:25,000 scale on an A3/A2 sheet. (including all eco-sensitive areas and environmentally sensitive places)
4.3	Details w.r.t. option analysis for selection of site
4.4	Co-ordinates (lat-long) of all four corners of the site.

Sr. No.	Terms of Reference
4.5	Google map-Earth download of the project site.
4.6	Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, greenbelt area, utilities etc. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.
4.7	Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, in particular.
4.8	Land-use break-up of total land of the project site (identified and acquired), government/private - agricultural, forest, wasteland, water bodies, settlements, etc shall be included. (not required for industrial area)
4.9	A list of major industries with name and type within study area (10km radius) shall be incorporated. Land use details of the study area
4.10	Geological features and Geo-hydrological status of the study area shall be included.
4.11	Details of Drainage of the project upto 5km radius of study area. If the site is within 1 km radius of any major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of Flood Level of the project site and maximum Flood Level of the river shall also be provided. (mega green field projects)
4.12	Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land. Documents related to conversion of land for Industrial purpose.
4.13	R&R details in respect of land in line with state Government policy.

**5. Forest, wildlife and CRZ related issues (if applicable):**

Sr. No.	Terms of Reference
5.1	Permission and approval for the use of forest land (forestry clearance), if any, and recommendations of the State Forest Department. (if applicable)
5.2	Land-use map based on High resolution satellite imagery of the proposed site delineating the forestland (in case of projects involving forest land more than 40 ha)
5.3	Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.
5.4	The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden thereon
5.5	Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I fauna, if any exists in the study area

Sr. No.	Terms of Reference
5.6	Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife
5.7	Recommendations and NOC from the concerned State/UT Coastal Zone Management Authority on CRZ angle

## 6. Environmental Status

Sr. No.	Terms of Reference
6.1	<p>Determination of atmospheric inversion level at the project site and site-specific micrometeorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.P</p> <ul style="list-style-type: none"> <li>• AAQ data (except monsoon) at 8 locations for PM10, PM2.5, SO2, NOX, CO and other parameters relevant to the project shall be collected. The monitoring stations shall be based CPCB guidelines and take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests. Study should indicate minimum, maximum value of different parameters for the period (3 months) collected. Collected data should be supported by the reference data of either CPCB or SPCB. AAQ data &amp; GLC of pollutants from stack emissions should suggest technology/ measures- Best Practiced Technology (BPT) indicating best achieved results.</li> </ul>
6.2	Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAQQM Notification of Nov. 2009 along with – min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an annexure to the EIA Report.
6.3	Surface water quality of nearby River (100m upstream and downstream of discharge point) and other surface drains at eight locations as per CPCB/MoEF&CC guidelines.
6.4	Whether the site falls near to polluted stretch of river identified by the CPCB/MoEF&CC, if yes give details.
6.5	Ground water monitoring at minimum at 8 locations shall be included.
6.6	Noise levels monitoring at 8 locations within the study area.
6.7	Soil Characteristic as per CPCB guidelines.
6.8	Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, parking arrangement etc.
6.9	Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. If Schedule-I fauna are found within the study area, a Wildlife Conservation Plan shall be prepared and furnished.
6.10	Socio-economic status of the study area.

## 7. Environment Impact and Environment Management Plan

Sr. No.	Terms of Reference
7.1	Assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features. In case the project is located on a hilly terrain, the AQIP Modelling shall be done using inputs of the specific terrain characteristics for determining the potential impacts of the project on the AAQ. Cumulative impact of all sources of emissions (including transportation) on the AAQ of the area shall be assessed. Details of the model used and the input data used for modelling shall also be provided. The air quality contours shall be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any.
7.2	Water Quality Modelling – in case of discharge in water body
7.3	Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor-cum-rail transport shall be examined.
7.4	A note on treatment of wastewater from different plant operations, extent recycled and reused for different purposes shall be included. Complete scheme of effluent treatment. Characteristics of untreated and treated effluent to meet the prescribed standards of discharge under E(P) Rules 1986.
7.5	Details of stack emission and action plan for control of emissions to meet standards
7.6	Measures for fugitive emission control
7.7	Details of hazardous waste generation and their storage, utilization and management. Copies of MOU regarding utilization of solid and hazardous waste in cement plant shall also be included. EMP shall include the concept of waste-minimization, recycle/reuse/recover techniques, Energy conservation, and natural resource conservation.
7.8	Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.
7.9	Action plan for the green belt development plan in 33 % area i.e. land with not less than 2,500 trees per ha. Giving details of species, width of plantation, planning schedule etc. shall be included. The green belt shall be around the project boundary and a scheme for greening of the roads used for the project shall also be incorporated.
7.10	Action plan for rainwater harvesting measures at plant site shall be submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground water and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources.
7.11	Total capital cost and recurring cost/annum for environmental pollution control measures shall be included.
7.12	Action plan for post-project environmental monitoring shall be submitted.
7.13	Onsite and Offsite Disaster (natural and Man-made) Preparedness and Emergency Management Plan including Risk Assessment and damage control. Disaster management plan should be linked with District Disaster Management Plan.

## 8. Occupational health

Sr. No.	Terms of Reference
8.1	Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers
8.2	Details of exposure specific health status evaluation of worker. If the workers' health is being evaluated by pre designed format, chest x rays, Audiometry, Spirometry, Vision testing (Far & Near vision, colour vision and any other ocular defect) ECG, during preplacement and periodical examinations give the details of the same. Details regarding last month analyzed data of above mentioned parameters as per age, sex, duration of exposure and department wise.
8.3	Details of existing Occupational & Safety Hazards. What are the exposure levels of hazards and whether they are within Permissible Exposure level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL so that health of the workers can be preserved,
8.4	Annual report of health status of workers with special reference to Occupational Health and Safety.

### 9. Corporate Environment Policy

Sr. No.	Terms of Reference
9.1	Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.
9.2	Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.
9.3	What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions? Details of this system may be given.
9.4	Does the company have system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report
9.5	Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase.

### 10. Corporate Environmental Responsibility (CER)

Sr. No.	Terms of Reference
10.1	Adequate funds, as per the Ministry's OM/Guidelines, shall be earmarked towards the Corporate Environmental Responsibility based on Public Hearing issues/socioeconomic issues and item-wise details along with time bound action plan shall be included (CER activities shall be related to environment). Socio-economic development activities need to be elaborated upon. For the projects where public hearing is not conducted, CER plan shall be provided based on socio-economic study of the area.

### 11. Additional studies/Measures to be considered

Sr. No.	Terms of Reference
11.1	Provide latest and ecofriendly technology for product manufacturing.
11.2	Emphasize on Green chemistry/Clean Manufacturing
11.3	Provide CAS No. of products along with product list.
11.4	Provide details of amount of carbon sequestered in their unit through greenbelt/other modes, in case of expansion project.
11.5	Life structure and sustainability for carbon and water foot print.
11.6	Detailed pollution Load estimation.
11.7	Transportation of Hazardous substance, effluents etc shall be carried out through authorized and GPS enable vehicles/Trucks only.
11.8	Category of Hazardous Wastes shall be mentioned in the EIA/EMP report and in presentation.
11.9	Details of greenhouse gases and emissions shall be provided.
11.10	Greenbelt shall be developed in the first year of the project and wind breaks shall be erected.
11.11	Study area map shall be overlapped with all the associated features.
11.12	Emphasize on green fuels.
11.13	The project from NCR shall not use Coal as fuel. Further, PP shall avoid use of Coal in the CPAs and elsewhere also if alternatives are available.
11.14	Provide the Cost-Benefit analysis with respect to the environment due to the project.
11.15	Details of carbon foot prints and carbon sequestration study w.r.t. proposed project needs to be spelled out. Proposed mitigation measures also need to be analyzed and submitted for further appraisal of the EAC
11.16	Any litigation pending against the project and/or any direction/order passed by any Court of Law against the project, if so, details thereof shall also be included. Has the unit received any notice under the Section 5 of Environment (Protection) Act, 1986 or relevant Sections of Air and Water Acts? If so, details thereof and compliance/ATR to the notice(s) and present status of the case.
11.17	A tabular chart with index for point wise compliance of above TORs and its details needs to be submitted in the EIA/EMP Report.

## 12. Specific Conditions

Sr. No.	Terms of Reference
12.1	Details on demand of the product – chlorine and its associated products

Sr. No.	Terms of Reference
12.2	Details on raw materials used in the production of chlorine (sodium chloride, potassium chloride, etc.), its storage and handling.
12.3	Details of proposed source-specific pollution control schemes (salt washing, filtration, cell ventilation as, chlorine handling and safety, etc.) and equipments to meet the national standards.
12.4	Detailed effluent treatment scheme including segregation for units adopting 'Zero' liquid discharge.
12.5	Authorization/Membership for the disposal of liquid effluent in CETP and solid/hazardous waste in TSDF, if any.
12.6	Details on products to be used and handling—chlorine, caustic soda, etc.
12.7	Details on tail gas treatment.
12.8	Details on requirement of energy and water along with its source and authorization from the concerned department.
12.9	In case of modernization of existing mercury based chlor-alkali plants with membrane cell Process (MBCP) industries or new unit in the existing industry premises, remediation measures adopted to restore the environmental quality of the ground water, soil, crop, air, etc., are affected due to salinity and a detailed compliance to the prior environmental clearance/ consent conditions.
12.10	Details on ground water quality and surface water quality of near by water sources and other surface drains. The parameters of water quality may include Residual chlorine*, TDS*, alkalinity*, pH* & Mercury* (in water & sediment), etc. (*- As applicable)
12.11	Details on existing ambient air quality and expected, emissions for PM10, PM2.5, SO2*, NOx*, CO2*, CO*, Chlorine*, acid mist* etc., and evaluation of the adequacy of the proposed pollution control devices to meet standards for point sources and to meet AAQ standards. (*-As applicable))
12.12	Specific programme to monitor safety and health protection of workers.
12.13	Risk assessment using advanced/latest models should also include leakages and location near to caustic soda plant & proposed measures for risk reduction
12.14	Details of the emergency preparedness plan for chlorine/ Hydrogen storage, handling and transportation and on- site and off- site disaster management plan.
12.15	Details of carbon foot prints and carbon sequestration study w.r.t. proposed project needs to be spelled out. Proposed mitigation measures also need to be analysed and submitted for further appraisal of the EAC.

### **Additional Terms of Reference**

1. The project proponent shall submit four copies of the draft EIA report (2 each for SEIAA and SEAC) in advance so that the said EIA reports can be studied thoroughly by SEIAA / SEAC. This will facilitate incorporating the suggestions / inputs of SEIAA / SEAC and also timely addressal of their concerns in

the final EIA report.

2. The project proponent shall consider undertaking additional environmental activities for ameliorating environment in the vicinity of the project area from amongst the following activities:

- Developing mini forests (Nanak Bagichi), urban forests, green belts, biodiversity parks etc., raising of avenue plantations and plantations in public/community areas/ educational institutions/Govt. buildings/banks of rivers/cantonment areas or any other land made available by the Govt. agencies and other institutions.
- Cleaning and rejuvenating village ponds, water bodies, wetlands, storm drains etc. (treatment of village sewer pond using PPCB and other approved scientific models), such as: (i) Action Plan for Rejuvenation of Ponds (<https://ppcb.punjab.gov.in/sites/default/files/documents/Action-Plan-forRejuvenation-of-Ponds-31.03.20.pdf>) (ii) Guidelines for restoration of Water Bodies (<https://ppcb.punjab.gov.in/sites/default/files/documents/Indicative%20Guidelines%20for%20Restoration%20of%20Water%20Bodies%20by%20CPCB.pdf>), and (iii) Technical Committee Report on wastewater treatment (<https://ppcb.punjab.gov.in/sites/default/files/documents/Report%20of%20Technical%20Committee%20For%20Treatment%20of%20Wastewater%20of%20Village%20Pond.pdf>)
- Developing infrastructure for (i) Utilizing treated effluent of STPs (double plumbing, construction work roadside sprinkling (ii) Reusing STP/ETP sludge as farmyard manure (FYM) or 'other activities approved by CPCB/PPCB/MoEF&CC, and (iii) Replacing soakage pits and/or providing septic tanks in government education institutions and other government buildings/projects.
- Provisioning solar panels/lights and other energy saving electric devices/equipment including LED bulbs etc. in the government/municipal/other public schools, hospitals and dispensaries etc. or in other public buildings.
- Provisioning Roof top rainwater harvesting (RWH) and other water/groundwater conservation activities in the government/ municipal/ other public schools, hospitals and dispensaries etc. or in other public buildings.
- Provisioning Solid waste management including composting/vermi-composting, authorized approaches of reuse & recycle, Material Recovery Facility (MRF) to reach zero waste condition, etc.
- Developing and establishing alternatives to the single use plastic (SUP) and plastic carry bags.
- Ameliorating air, water, soil & noise pollution as prescribed in the applicable District Environment Plan (DEP) <https://decc.punjab.gov.in/> where gaps exist and which are not the statutory responsibility of government departments / agencies, including need based environmental activities as proposed by the project proponent/their accredited consultants based on site-specific field surveys of the project and nearby areas and approved by SEIAA/SEAC/PPCB.
- Preparing Peoples Biodiversity Register (PBR) at all levels (District, block & village) and conserving state's biodiversity heritage sites (BHS), Eco zones, Hotspots, Wildlife & bird sanctuaries, etc.
- Organizing environmental awareness activities/celebrations/programmes, preparing and distributing resource material for abatement and control of pollution and restoration of the environment of Punjab and approved by SEIAA/SEAC/PPCB/academic experts.
- Suppressing dust by using vacuum cleaners, sprinklers, fountains, misting machines/vehicles/artificial rain etc.

- Managing waste in a scientific and environmentally sound manner including establishment of recovery facilities of e-waste, construction and demolition waste, plastic waste, toxic/hazardous waste, bio-medical waste, industrial wastes, dairy/Gaushala waste etc.
- Promoting and developing ecotourism areas/activities, green buildings, agriculture diversity, organic/natural farming/herbal/medicinal/botanical gardens, electric vehicles, cleaner fuels, biodegradable materials, etc.
- Controlling and managing (In-situ/Ex-situ) stubble burning (Parali) in Punjab.
- Developing clean and innovative technologies for reducing water, air and solid waste pollutants including reuse and recycling of resource materials.

## Annexure 2

### Details of Products & By-products

Name of the product /By-product	Product / By-product	Existing	Proposed	Total	Unit	Mode of Transport / Transmission	Remarks (eg. CAS number)
CAUSTIC SODA or CAUSTIC FLAKES	Product	82500	22500	105000	Tons per Annum (TPA)	Road	NA
LIQUID CHLORINE	Product	73095	19935	93030	Tons per Annum (TPA)	Road	NA
HYDROCHLORIC ACID	Product	66000	4000	70000	Tons per Annum (TPA)	Road	NA
STABLE BLEACHING POWDER	Product	24000	0	24000	Tons per Annum (TPA)	Road	NA
SODIUM HYPO CHLORITE	Product	8250	17100	25350	Tons per Annum (TPA)	Road	NA
Hydrogen	Product	2062.5	562.5	2625	Tons per Annum (TPA)	Road	NA