

GUIDELINES ON BRICK MANUFACTURING UNIT

1. INTRODUCTION:

Brick is one of the primary building materials known to the mankind. The process of manufacturing of brick also has not undergone much change over centuries across the world. The bricks are significant basic material for all spheres of building activities and constitute about 15% of the total building material cost. In Assam burnt clay bricks are mainly used as material for construction since it produces a superior and comfortable physical living environment than other materials. Despite the initiation of other type building and walling materials such as earth block, concrete block, stone concrete, stone block, fly ash brick etc. Burnt clay bricks still occupy the dominant position in Assam and elsewhere mainly due to economic as well as its environmental friendly reasons.

The consumption or demand of burnt clay bricks in Assam is around 2,500 million pieces which is going to be around 4000-5000 million piece in 2013-15 period. There is a vast gap between supply and demand of these clay bricks in Assam. Therefore there is urgent need for another 300-500 bricks kilns in Assam to meet the demand and supply gap. The traditional brick making process is still used in Assam and rest of India. The following steps are involved in the clay brick manufacturing:

- i) Material procurement : In Assam the basic raw material is Alluvial clay with requisite plastic properties. The requirement for 1000 clay bricks is as follows:

Clay	:	4 tones
Silt	:	0-0.4 tones
Coal	:	0.2 tones
Water	:	3-4 KI
- ii) Tempering : The clay is mixed with water to get right consistency either manually or with pug mills.
- iii) Moulding : The tempered clay is then rolled in sand and shaped into mould. The sand prevents the clay from sticking to mould.
- iv) Drying : Sun drying in open air is carried for 10 days or so.
- v) Firing : The sun dried bricks are arranged in the kiln and insulation is done by mud pack. The firing is done through the fire hole and the kiln is kept in sealed condition to keep the heat inside for about a week.
- vi) Sorting : The sorting is done on basis of colouration which is an indication of level of burning.

2. THE ENVIRONMENTAL ISSUES ASSOCIATED WITH BRICK MANUFACTURING:

The Central Pollution Control Board, Delhi (CPCB) has already recognized the brick production industry a highly resource and energy intensive as well as polluting industry which is mostly due to obsolete traditional production technologies employed in India.

While the cluster of brick kilns are source of local air pollution affecting local population agriculture and vegetation. At global level they also contribute to climate change.

The traditional brick manufacturing needs considerable land area and top soil. The land area near the kiln is subjected to high temperature making it unfit for uses in agricultural activities after being abandoned. The brick manufacturing uses thousand of tones of coal and biomass fuel (The energy use is 30-35 % of production cost).

The possible pollutants from brick kilns are:

1. Carbon dioxide (CO₂).
2. Carbon monoxide (CO).
3. Sulphur dioxide (SO₂).
4. Nitrogen Oxides (NO_x).
5. Suspended Particulate Matter (SPM).

Along with these there is a problem of high volume of bottom ash as residue.

The other possible environmental threat may be disturbance of flow path of natural stream, nullah, river due to establishment of the brick kiln in the vicinity in the path leading to obstruction in down stream as well as for distribution on flow of water during rainy season.

In consideration of various environmental concern relating to the brick kilns the following guidelines are issued to reduce the pollution from the brick kilns at minimum possible level to avoid adverse affects on the health of plants, animal and human life.

3. COMPETENT AUTHORITY:

Any project proponent who intends to establish a brick kiln must seek prior Consent to Establish (CTE) under Air (Prevention & Control of Pollution) Act, 1981 before taking any step for establishing the brick Kiln. Like wise, he must seek Consent to Operate (CTO) before commissioning the plant. Application format for Consent to Establish may be downloaded from Board's website (www.pcbassam.org/consent.htm) or may be obtained from Regional Offices of the Board and its Head Quarter. The proponents must submit duly filled (in duplicate) in application forms alongwith prescribed fee to the concerned Regional Office of the Board.

4. LOCATION OF LAND:

A brick Kiln unit can be established on a land owned by the promoter (or on such land taken on lease or agreement for at least 10 years) by the promoter provided that:

- 4.1** Brick kiln shall be established at least 300 m away from residential area having a minimum population of 100-150 people or 20 houses including both kachcha/thatched and pucca houses, 500 meters from a residential area having a population more than 150 or more than 20 houses including both kachcha/thatched and pucca houses. However the distance from notified municipal area/town committee shall be not less than 1.0 Km.
- 4.2** The aerial distance of brick kilns shall be at least 500 mtrs. from the areas like registered hospital, school, public building, religious place or a place where flammable substances are stored. Brick kilns shall not be allowed within a radius of 1.0 km in notified sensitive areas like Zoo, wild life sanctuary, historic monuments^{*}, museum etc. The distance to be verified by an officer not below the rank of Forest Range Officer/Revenue Circle Officer or the Board official not below the rank of Asstt. Executive Engineer in the format enclosed as **Annexure-I**.

4.3 Brick kilns shall not be constructed within 200 m (aerial distance) from the sides of railway tracks.

4.4 The clay collection/excavation area for the brick kiln shall not be an area falling within the restriction limits prescribed under Rule 7 of Assam Minor Mineral concession Rules, 2013 reproduced below:

“1. No mining lease/ contract/ permit shall be granted in respect of any land within a distance of :

- i) Fifty meters from the outer periphery of the defined limits of any village habitation, National Highway, State Highway and other roads where such excavation does not require use of explosives;
- ii) Two hundred fifty meters from the outer periphery of the defined limits of any village habitation, National Highway, State Highway and other roads where use of explosives is required;
- iii) Five hundred meters from major structures like R.C.C. Bridges Guide bund etc.;

Provided that the Government may relax the above distance parameters, wherever required in the interest of workings, mineral conservation or for any unforeseen reasons subject to such conditions as may be imposed under the said relaxation.

2. No mining lease/ contract/ permit or other mineral concession shall be granted in respect of any such minor mineral or in respect of any specific or general area which the Government may notify.”

4.5 The distance between two brick kilns shall not be less than 500 m to avoid clustering of brick kilns in an area if a new brick kiln is being installed.

4.6 Brick kiln should be constructed at least 500 meters away from path of any natural water flow as well as from River bank water front of beels, lakes etc. More over no top soil from these areas (within the vicinity of 500 meters) be extracted for making the green bricks (kutchra bricks) which are necessary for ensuing stability of river bank.

Note: The distance criteria mentioned under Para 4.1 to 4.6 shall not be applicable for existing brick kilns which have been established with valid Consent of the Board prior to the date of issue of these guidelines

4.7 No brick kilns shall be allowed within the co-ordinates of “No Development Zone” around the Numaligarh Refinery without the consent of MoEF. The renewal of “Consent to Operate” in respect of existing units for their operation at present location would depend upon the final outcome of case pending with NGT and decision of MoEF.

4.8 The brick kiln situated outside the co-ordinates of “No Development Zone” around the Numaligarh Refinery shall be allowed to function subject to the compliance of the Guidelines for operation of such units as prescribed by the Ministry of Environment & Forests, Govt. of India; Central Pollution Control Board, Delhi and Pollution Control Board, Assam.

4.9 After scrutinizing the application of the proponent of brick unit, the Regional Office of the Board shall arrange for Public Hearing in the concerned Gram Panchayat for assessing the acceptability of industry by local people.

5. LOCATION OF PLANT & MACHINERY:

The minimum area of land for establishing a brick kiln unit should be such that after establishing plant and machinery and leaving sufficient space for material stock and movement of vehicles, enough space is available all around for planting at least two rows of trees, shrubs or bamboo along the periphery.

6. STANDARDS TO BE ACHIEVED:

Stack height to be provided with different type of brick kilns and emission standards have been notified by Ministry of Environment & Forests (MoEF), Govt. of India under Schedule I at Sl. No. 74 of Environment (Protection) Rules, 1986 (as amended time to time) vide G.S.R. 543 (E) dated 22.07.2009 (**Annexure-2**).

There are other activities in brick manufacturing process like mining / quarrying of clay, handling & transportation of raw material / bricks which contribute to ambient air pollution. MoEF has also Notified National Ambient Air Quality Standards dated 16th November, 2009 (**Annexure-3**).

These standards are mandatory to be achieved by the Brick Kiln units.

7. POLLUTION CONTROL MEASURES REQUIRED:

Following measures must be taken by brick kiln owners for abatement of pollution:

- i. Approach road within the premises of brick kiln area should be pucca/ stabilized with brick bats etc.
- ii. They should use crushed coal for better burning efficiency.
- iii. Bricks should be laid in such a staggered manner for baking to entrap maximum particulate matter at the source itself.
- iv. They should use a properly designed gravity chamber.
- v. Permanent stack should be provided at the brick kiln and height of chimney / stack should be at least 30 meters. No moving chimney shall be allowed.
- vi. Water sprayers shall be installed and operated at strategic locations.
- vii. The approach road to site of brick kiln (including the storage site if it is at different place) from the nearest public road for the transportation of raw material/final products must be paved or hard surfaced.
- viii. Active haul roads inside the works should be adequately wetted with water (preferably recycled and treated waste water).
- ix. Exhausts of trucks for transportation of materials within the site should be directed upward.
- x. Wheel cleaning facilities should be provided, for delivery trucks leaving the works, for the removal of mud.

8. OPERATION AND MAINTENANCE:

- i. Water storage facility (minimum 3000 liters) must be provided at the brick kiln site.
- ii. A high standard of housekeeping should be maintained.
- iii. Malfunctioning or breakdown of any equipment / machinery leading to abnormal emissions should be dealt with promptly.

9. GENERAL CONDITIONS:

- i. A Sign Board showing the name, address and capacity of the brick kiln as well as validity of the consents should be displayed at the entrance of the site.
- ii. Brick kiln industry must have valid source for raw material either in self ownership or with proper legal arrangement. An affidavit to this effect shall be submitted by the Project proponent. Clay mining area should be reclaimed after utilization.
- iii. The application for consent and reply to notices etc. must be furnished by owner (including lawfully empowered attorney for such purpose) of the unit. Where the owner of the brick kiln is a Juristic person (Company, Firm, Association etc.), the applications must be filed/information must be furnished under the seal and signature of a person authorized for such purpose and the document confirming the authorization must be attached.
- iv. Local agro industrial wastes residue shall be encouraged for use as internal fuel to replace coal in a phased manner.
- v. The use of local agricultural wastes residues as a substitute to coal fire shall be encouraged and non-hazardous industrial waste such as stone dust, rice husk ash, red mud etc. shall be encouraged to be mixed with top soil.
- vi. Fly ash shall be used in brick molding in compliance of the notification (as amended) issued under the provision of Environment (Protection) Act, 1986 to manufacture soil – fly ash brick.
- vii. Spent organic solvent, oily residue, pet coke, filter press cake (hazardous waste) etc. and other wastes such as plastic, rubber, lather etc. shall not be allowed as fuel in brick kiln.
- viii. Lighting arrestor as per the PWD norms or any other standard design shall be installed for brick kiln to avoid the damage to stacks/chimney caused due to lightning attack.
- ix. In Brick Kiln besides the above Good House Keeping practices including disposal of coal ash, provision of double wall around the kiln, proper layout, Brick lining of passage, use of properly graded coal, proper firing practices, protection from noise pollution and other measures should be followed by all Brick Kiln Owners.
- x. The above sitting criteria will be applicable to all Bulls Trench Kilns irrespective of their brick production capacity.

10. ENVIRONMENTAL CARE: GREEN BELT DEVELOPMENT:

For conserving environment from adverse effect of emissions, the industry must ensure that:

- i. Minimum 33% of the land on which industry is established or proposed to be established is covered by plantation.
- ii. Multi layer and multi storey green belt of 10 m width or two rows of bamboo shall be developed along the periphery of brick kiln leaving two 10 m wide gaps in the boundary for entry and exit of material and vehicles. A wall of 3 m height shall be constructed on the sides where land is not available for green belt development to prevent fugitive dust emission. For installation of brick kiln with green belt development, the minimum area required is 5 bighas.

11. PROCEDURE TO APPLY FOR CONSENT TO ESTABLISH:

The prescribed application form for Consent to Establish can be downloaded from Board's Website (www.pcbassam.org).

The application for Consent to Establish before establishing a new brick kiln unit or expansion of an existing unit must be submitted in the prescribed form along with following documents failing which additional consent fees will be payable as per provisions of the Rules:

- i. Requisite Consent fee as prescribed by Govt. of Assam, Notification as amended from time to time (**Annexure-4**).
- ii. Declaration on Rs. 10/- non judicial stamp paper duly attested by notary public as per **Annexure-5**.
- iii. Details of valid source of raw material in accordance with Rule 26 of Assam Minor Mineral Concession Rules, 2013 (**Annexure-6**).
- iv. Certificate regarding distances issued by Revenue Circle Officer/Forest Range officer/PCB Official as per **Annexure-7**.
- v. Project report of proposed plant including all costs duly attested by Chartered Accountant.
- vi. Details of various of air pollution and proposal for pollution control measures.
- vii. Ownership documents for land/lease deed.
- viii. Land conversion letter / land allotment letter for brick kiln issued by the Competent Authority not below the level of Circle Revenue Officer as per format enclosed as **Annexure-8**.
- ix. Layout plan showing the location of plant and machinery and the green belt giving to the scale dimensions and also specifying the width of green belt.
- x. Location plan of proposed site showing distance from road and nearest village.
- xi. Copy of partnership deed / MOU & Article of Association as the case may be.
- xii. Document confirming the authorization of signatory of the application form and enclosures.

On receipt of the duly completed application the Regional Office of Board shall conduct Public Hearing in local Gaon Panchayat as per procedure detailed in PCBA letter No. G-698/10-11/97 dtd. 20-12-2012 and send the application to the Board Head Quarter along with record of Public Hearing – The Board's letter dated 20.12.2012 is appended as **Annexure-9**.

12. PROCEDURE TO APPLY FOR FIRST CONSENT TO OPERATE:

The application for Consent to Operate must be filed after establishing the unit and at least four months before the date of expiry of period of Consent to Establish.

The prescribed application form for Consent to Operate can be downloaded from Board's website.

The application form for Consent to Operate must be submitted along with following documents:

- i. Requisite consent fee as per the Department of Environment, Govt. of Assam, Gazette Notification No. ENG.26/2003/14 dated 12.11.2003 as amended from time to time.

- ii. Declaration on Rs. 10/- non judicial stamp paper as per format at Annexure-5.
- iii. Investment certificate issued by Chartered Accountant as per format at Annexure-7.
- iv. Report of compliance of all the conditions of consent to establish point to point.
- v. Status of implementation of the action plan for green belt development, i.e., the number of plants planted, area covered by plantation, area yet to be covered by plantation etc. alongwith photographs of plantation as an evidence for record.
- vi. Document confirming the authorization of signatory of the application form and enclosures.
- vii. Copy of documents required with consent to establish as per Para 11, if not submitted earlier.
- viii. Copy of Reports for excavation of brick required to be obtained from Forest Department in accordance with Rule 26 of Assam Minor Mineral Concession Rules, 2013 Form DIM 1 & PIM 2.

13. PROCEDURE TO APPLY FOR RENEWAL OF SUBSEQUENT ANNUAL CONSENT TO OPERATE:

The application for renewal of Consent to Operate must be filed at least four months the date of expiry of period of Consent to Operate.

The application for renewal of Consent to Operate must be preferred in prescribed form along with following documents:

- 13.1 Requisite Declaration on Rs. 10/- non judicial stamp paper as per format at **Annexure-5**.
- 13.2 Investment certificate issued by Chartered Accountant as per format at **Annexure-10**.
- 13.3 Report of compliance of conditions of previous year's Consent to Operate point to point.
- 13.4 Status of implementation of the action plan for green belt development i.e. the number of plants planted, number of plants surviving, area already covered by plantation etc. alongwith photograph of plantation.
- 13.5 Copy of periodical reports submitted.
- 13.6 Document confirming the Authorization of signatory of the application form and enclosures.
- 13.7 Status of payment of Water Cess, as applicable.

14. PERIODICAL REPORTS REQUIRED TO BE SUBMITTED TO THE STATE BOARD:

Following periodical reports must be submitted to the Board. Failure to submit these reports shall be treated as non compliance for the purpose of future consents.

- a) Annual compliance report of Consent conditions to the Competent Authority.
- b) Annual stack emission and Ambient Air Quality Monitoring Report to the Competent Authority.
- c) Annual Environment Statement in the prescribed format as under Environment (Protection) Act 1986(**Annexure-11**) to the Competent Authority.
- d) Annual production and dispatch details of bricks.

15. CONSEQUENCE OF DEFAULTING COMPLIANCE OF GUIDELINES:

If any non compliance is observed during the operations, notice under Section 31(A) of the Air Act will be issued and proponent will be directed to rectify the non compliance within specified period. If non compliances are found to be continuing even after show cause notice, the consent will be revoked/refused and closure directions will be issued under Section 31(A) of the Air Act, 1981 forthwith. The owner will also be liable criminal prosecution.

16. CONDITIONS FOR REVOCATION OF CONSENT:

The consent granted will be revoked if it is found that:

- 16.1 It has been obtained by misrepresentation of facts.
- 16.2 The industry defaults in Pollution Control Measures.
- 16.3 If found that the raw material is procured from illegal sources.
- 16.4 The industry defaults in furnishing of annual information even after expiry of 30 days from the prescribed period.

Further, in case of a brick kiln unit established after obtaining consent from the Board, the Consent may not be renewed without appropriate legal action if it is found that:

- The project proponent has failed in compliance of the conditions laid down in the consent and
- On enquiry it is established that there is deterioration of AAQ as also experienced by local community.

17. RECLAMATION OF BRICK FIELDS:

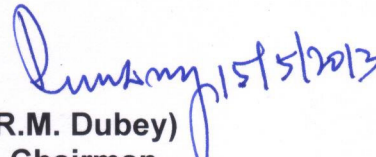
The top layer i.e. the HUMUS layer of the land used for earth mining as well as Kiln area must be preserved safely in a area inside Brick field to be used for the reclamation of the depleted/abandoned brick field or kiln area later on. The thickness of this layer must not be less than 1.5 ft. This is to retain the fertility of the land used for brick manufacturing process after being abandoned.

The annexure referred in the guidelines are enclosed.

All concerned are directed to ensure strict compliance of the guidelines while dealing with the issues related with the brick kiln industry.

The guidelines are meant to serve as a guide only. In case of interpretation of any question related to law, the provisions of the original law and the rules made there under with various Government directions/resolutions will have to be read and followed. In case of amendment to the original Act/Rules/Notifications made there under, the provisions as amended from time to time shall be applicable. The Board in process of introducing "On line Consent Management System" and on being introduced the guidelines under Para 11, 12 & 13 shall be suitably modified.

These guidelines are issued as Direction of the Board in supersession to all the previous guidelines/directions under Section 5(a) of Environment (Protection) Act, 1986 for Regulation and Operation of Brick Kilns in the State of Assam and who ever fails to comply with these guidelines/directions shall be dealt with provisions made Section 15, 16 or 17 of the Environment (Protection) Act, 1986 as the case may be.


(R.M. Dubey)
Chairman
