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STATE POLLUTION CONTROL BOARD,ODISHA

[DEPARTMENT OF FOREST, ENVIRONMENT & CLIMATE CHANGE, GOVERNMENT OF ODISHA]
Paribesh Bhawan, A/118, Nilakantha Nagar, Unit - VIII
Bhubaneswar - 751012

No. 17985 / IND-II-CTE(Misc.)371/2024-25 Date: 05.11.2024/

RESOLUTION

Ready-Mix Concrete plant, like many industrial operations have several environmental impacts and challenges. Addressing these issues is crucial for minimizing their impacts on the surrounding environment. Therefore, a dedicated guidelines on functioning of Ready-Mix Concrete units on environment management is necessary to guide all the stakeholders associated with it. State Pollution Control Board, Odisha has prepared a guidelines so that RMC can operate with proper documentation, mitigation measures and prescribed environmental management system.

This "Environmental Guidelines for operation of Ready-Mix Concrete Plants (RMCs) in the State of Odisha" is duly approved by the Chairman of State Pollution Control Board, Odisha and has the provision for operation of RMCs w.r.t. siting and environment management. This guidelines stipulates the air pollution control measures, water pollution control measures, solid waste management and other allied environmental mitigation measures to be adopted by RMCs during their operation. This guidelines is applicable to the whole State of Odisha and comes to effect from the date of issue of this order. This guidelines can be downloaded from the official website of SPCB, Odisha (www.ospcboard.org). The RMC plants operating prior to the date of issue of this order shall adopt pollution control measures as stipulated from Sec 6.2 to Sec 6.6 of this guidelines within a period of six months.

By order of the Chairman

MEMBER SECRETARY

Memo No. 17986 / Date 05.11.2024/

Copy forwarded to the OSD to Chief Secretary, Govt. of Odisha for kind information of Chief Secretary and Chairman, State Pollution Control Board, Odisha.

Encl.: As above

MEMBER SECRETARY

Memo No. 17987 / Date 05.11.2024/

Copy forwarded to the Additional Chief Secretary to Govt., Forest, Environment & Climate Change Department, Govt. of Odisha for information.

Encl:-As Above

MEMBER SECRETARY

Memo No. 17988 / Date 05.11.2024/

Copy forwarded to the Development Commissioner-cum-Additional Chief Secretary, Water Resources Department, Principal Secretary to Govt., Industries Department / Principal Secretary to Govt., H&UD Department / Principal Secretary to Govt., Works Department / Principal Secretary to Govt., Rural Development Department / Principal Secretary to Govt., (OREDA) Department of Energy, Govt. of Odisha / Director Env-Cum-Special Secretary to Govt. Forest, Environment & Climate Change Department, Govt. of Odisha/ All District Magistrate-cum-Collector / Regional Officer, Regional Office, NHAI, Bhubaneswar for information.

Encl.: As above

MEMBER SECRETARY

Memo No. 17989 / Date 05.11.2024/

Copy forwarded to All Branch Heads and Regional Officers, SPCB, Odisha/ Sr. Administrative Officer to publish the resolution in Odia & English newspaper for information of stakeholders of RMCs.

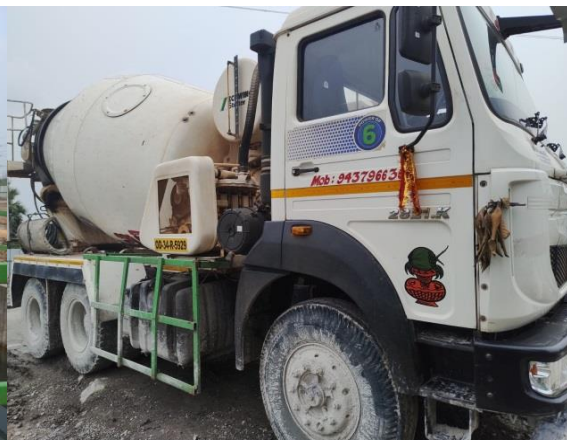
Encl.: As above

MEMBER SECRETARY

No. 17985/IND-II-CTE(Misc.) 371/2024-25 Date: 05/11/2024

ENVIRONMENTAL GUIDELINES FOR OPERATION OF READY-MIX CONCRETE PLANTS IN THE STATE OF ODISHA





State Pollution Control Board, Odisha

(DEPARTMENT OF FOREST, ENVIRONMENT & CLIMATE CHANGE, GOVERNMENT OF ODISHA)

Paribesh Bhawan, A/118, Nilakantha Nagar, Unit – VIII
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Contents

List of abbreviation

BF	–	Blast Furnace
CPCB	–	Central Pollution Control Board
CTE	–	Consent to Establish
CTO	–	Consent to Operate
FRP	–	Fiber Reinforced Polymer
GGBS	–	Ground Granulated Blast Furnace Slag
GI	–	Galvanised Iron
Govt.	–	Government
MDR	–	Major District Road
MS	–	Mild Steel
NAAQS	–	National Ambient Air Quality Standard
PCM	–	Pollution Control Measure
PCP	–	Prevention and Control of Pollution
PM	–	Particulate Matter
RCC	–	Ready-mix Cement Concrete
RMC	–	Ready-mix Concrete
SPCB	–	State Pollution Control Board

1. Background

Concrete is one of the key raw materials used for structural projects around the world. Concrete is typically divided into two categories based on its location of preparation: onsite mixed and ready-mix concrete. Concrete, due to its versatility and durability, is the world's most widely used construction material. With increased focus on infrastructure and housing activities, use of concrete in various forms is increasing day by day. For sustainability of RCC construction, proper quality of desired grade and optimum performance of concrete is of paramount importance. Ready Mixed Concrete that is batched in a controlled environment at a central plant instead of being mixed on the job site is always a better option. Starting from early nineties, RMC industry has grown from the second half of the nineties to the present state, when it has spread to the two and three tier cities also.

The State of Odisha is witnessing massive infrastructural growth both in industrial sector as well as in urban development. Construction is an integral part of any developmental process, where concrete and steel are essential for all construction work. Thus, operation of ready-mix concrete units plays a vital role in economic growth of the State.

On one side, the functioning of RMC provides the base material for construction; on the other side it also causes environmental pollution in form of dust nuisance, water pollution; waste generation which leads to environmental pollution. The environmental management guidelines for RMC plants are therefore crucial to minimize their impacts on the environment and surrounding communities. Therefore, a dedicated guideline on functioning of RMC on environment management to guide all the stakeholders associated with RMC units is the need of the hour. In this background SPCB, Odisha has prepared this guideline so that RMC can operate with proper documentation, mitigation measures and prescribed environmental management systems.

This guidelines shall be applicable to all RMC plants in the State of Odisha from the date of publication of guidelines.

2. Definitions

i. **Ready-mix concrete (RMC)**: Ready-mix concrete is the concrete produced from a concrete batching plant for onward dispatch and use in a plastic state.

ii. **Captive RMC plant:** A concrete batching plant which has been set up within the project site for the sole purpose of supplying RMC to the dedicated project site. A captive batching plant is usually set up by the construction project through the RMC manufacturer or contractor or any other agency for supply of RMC to their specific project construction site. The captive RMC plants are generally dismantled on completion of construction of the parent projects.

iii. **Standalone RMC Plant:** A concrete batching plant which has been set up at an independent location for the purpose of supplying RMC to the dedicated project site and/or multiple project sites or customers. Therefore a standalone RMC plant may be put to captive or commercial use.

3. Operation of Ready-Mix Concrete Plant

Operating a Ready-mix concrete plant involves several key processes and components to ensure the production of high-quality concrete that meets specified requirements. A typical ready-mix concrete plant operation includes raw material storage, batching, mixing and transportation.

3.1 Raw Material Storage

i. The raw materials used for production of concrete are cement, fly ash, Ground granulated blast furnace slag (GGBS); coarse aggregates like gravels / crushed stone / chips, fine aggregates like sand, and water.

ii. Cement, fly ash, Ground granulated blast furnace slag (GGBS) are usually stored in dedicated silos.

iii. Aggregates like sand, gravel, or crushed stone are stored in separate dedicated platforms.

iv. Admixture like chemicals which are added to modify properties (e.g. retarders, accelerators) are stored in sealed covers.
v. Water is stored in overhead tanks or used directly from a water source.

3.2 Batching

The batching is the process of weighing the desired proportion of ingredients into a mixture for developing a batch of concrete. In certain cases, computerized systems are ensured for precise measurements and control over the batching process. The batching process is of two types, manual batching and automated batching. In manual batching materials are measured manually and in automated batching electronic systems are used to weigh and mix material accurately. In most of the RMC plants, computer controlled automated batching process is adopted.

3.3 Mixing

The raw materials are fed into the batching plant mixer by means of conveyor belts. The required quantity of cement, fly ash, GGBS etc. are fed to the mixer through screw conveyor. The mix is blended for a specific period to ensure uniformity and consistency. The type of mixing equipment is either drum mixture or pan or planetary mixture.

3.4 Transportation

After completion of mixing, the RMC is discharged and transported either through transit mixtures or pumps. In transit mixture, the truck is equipped with rotating drum that keeps the concrete free from binding during transportation. For high-rise buildings and small distances, concrete is pumped from the RMC plant to the construction site.

4. Environmental Issues

Ready-mix concrete plants, like many industrial operations, have several environmental impacts and challenges. Addressing these issues is crucial for minimizing their impacts on the surrounding environment. Here are some major environmental issues associated with operation of ready-mix concrete plants:

4.1 Air Pollution

The foremost environmental issue is generation and emission of fugitive dust while loading/ unloading of materials, storage/ transfer of materials, mixing of materials and movement of heavy vehicles. Substantial quantity of fugitive dust is generated from the road surface. These dusts affect air quality and pose health risks to workers and nearby communities.

4.2 Water Pollution

The washing of trucks, mixers and concrete mixing equipment like drums and blades etc. leads to wastewater generation and disposal. Concrete washing water has a high pH value due to its limestone aggregate content. Concrete washing water contains hydroxides, sulphate and chlorides. Excessive water use has impact on local water resources. And improper discharge of wastewater can lead to contamination of water bodies.

4.3 Solid Waste

Solid waste is usually generated from excess concrete, packaging materials and vehicle maintenance. The concrete residue is generated from the inside of concrete truck drums or transit mixtures. Hardened concretes are the unused concretes which fail to meet the specification desired for construction. These are the coarse and fine aggregates reclaimed by the aggregate washing. Improper disposal of waste can lead to environmental contamination and increased landfill use. Similarly improper disposal of concrete containing wash water on land create a layer of sludge / crust on ground. This causes ground water contamination. Further this prevents rainwater percolation into the ground.

4.4 Noise Pollution

In RMC plant the equipment operation, mixing and transportation can generate noise. Excessive noise can affect the health and wellbeing of workers and nearby residents.

5. Applicability of Guidelines

i. This guideline shall be applicable to all the RMC plants, irrespective of their capacity and category (Captive and Standalone). Only the siting criteria shall be applicable to the new RMC plants from the date of the publication of the guideline. The details of siting criteria are elaborated in subsequent Section – 6.1 of this guideline.

ii. The Ready Mix Cement Concrete (RMC) plant is to be regulated under Green Category Industry vide O/o. No. 1543, Dt. 04.02.2023 of the State Pollution Control Board, Odisha.

iii. The proponent of Standalone RMC plant shall obtain prior Consent to Establish (CTE) and Consent to Operate (CTO) from SPCB, Odisha as a Standalone Unit as per the provisions of Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981 for Green Category Industry.

iv. In normal cases, the proponents of the captive RMC plant shall obtain Consent to Establish as an integral part of the main project while applying for Consent to Establish for the main project. In cases, the installation of a RMC becomes necessary for execution of main project, the project proponent shall apply for Consent to Establish separately for inclusion of captive RMC as an integral part of main project. In such cases the SPCB shall consider the application for grant of CTE for RMC either through

amendment of CTE order of main project or issue separate CTE for the RMC linked with the main project's CTE order.

v. The captive RMC shall be of temporary in nature and the validity of its CTE shall be coterminous with the CTE of the main project. Since the operation of captive RMC is for limited period, it shall cease to operate and/or shall be dismantled before grant of Consent to Operate for the main project. A separate CTO is not required for the RMC Plant, however, since the RMC plant will be commissioned before main project, thus before commissioning of the RMC plant, the RMC plant shall fulfill of all the pollution control measures as enumerated in subsequent chapters which will be verified by the concerned Regional Officer.

vi. As the captive RMC plant is to be treated as an integral part of the main project, the category of captive RMC (Red/Orange/Green) shall be same as that of the main project. If the main project is a White category project, then the captive RMC including the main project shall be treated as Green Category project and the CTE order shall be issued as per the provision of issue of CTE order to the Green category projects by SPCB.

6. Environmental Guidelines for Ready-Mix Concrete Plant

6.1 Siting Criteria

i. For standalone RMC plant a minimum distance of 100 m from major roads like National Highway, State Highway, MDR etc. shall be maintained.

ii. Standalone RMC plant shall be established at least 250m away from the nearby educational institutions like schools and colleges, hospitals, courts and human habitations.

iii. The RMC plant, which proposes to be operated within the premises of main project, shall be located in the project site in such a manner that, it shall be farthest from the nearby habitation.

iv. This siting criteria is not applicable for RMC plant proposed to be established inside Industrial Estates.

6.2 Air Pollution Control Measures

i. Main fine raw materials like cement, fly ash, ground BF slag and other fine raw material shall be received in bulkers, at the project site to minimize fugitive dust emission.

ii. The fine raw materials should be loaded into respective silos through pneumatic or hydraulic conveyance system to minimize fugitive dust emission.

iii. The fines storage silos shall have an adequate dust collection system, such as a bag filter. Dust collected from a bag filter shall be used for construction purposes or suitably reused to maintain efficiency above 99% and to comply with the prescribed emission norms. Bags should be changed periodically to maintain efficiency. Height of stack attached to bag filter shall be either minimum eleven (11) meters or two (02) meters higher than the highest node of the plant (whichever is higher). Bag filters shall have proper enclosure with a monitoring gate with gasket for monitoring purposes in the filter section and hopper area.

iv. All the material transfer points including the silo discharge point and silo tops shall be covered from all sides and connected to air pollution control devices like bag filters and cyclones.

v. Other raw materials like coarse aggregates (gravel) and fine aggregates (sand) shall be transported to project site by properly covered vehicles

(i.e. the top of the vehicle must be covered by flexible tarpaulin/ synthetic fiber sheet etc.) to prevent fugitive dust generation while transporting.

vi. These fine and coarse aggregate materials should be stored on earmarked concrete platforms. The platform should have toe walls with adequate height to prevent spill over. The storing of these raw materials shall be done under covered tarpaulin during non-operational period.

vii. The storage of fine and coarse aggregate materials in closed sheds (three sides and tops to be closed) should be encouraged. In order to safeguard the structure, it should be designed in such a way that the gap for passing the wind should be optimum.

viii. Weigh bines and hoppers shall be covered by GI/ MS sheet on three sides and at the top where front end loaders are used.

ix. The conveyor belts shall be covered by GI/ MS/ FRP Sheets. The gaps left for maintenance purpose shall be covered with sheets to minimize dust emission.

x. A closed mechanized system shall be used to mix the cement, fly ash, sand aggregates etc.

xi. The internal roads of the RMC should be paved, concreted or asphalted. These roads shall be cleaned regularly to avoid accumulation of dust and generation of fugitive dust during vehicular movement.

xii. The plant premises should be provided with dust barrier of height at least 7 m all around the boundary of the plant with appropriate material such as masonry, GI Sheets etc. The height of the dust control barrier shall be higher than the free fall height of the bulk materials.

xiii. Regular wetting sprinkling / fogging should be carried out within the RMC premises and on the roads to prevent generation and resuspension of fugitive dust.

xiv. A tyre (wheel) washing facility should be provided both at entry and exit gates of the RMC.

xv. Necessary preventive measures shall be taken so that the ambient air quality shall conform to National Ambient Air Quality Standards (NAAQS) of CPCB issued vide Notification No. B-29016/90/PCI-I, Dt. 18.11.2009. Ambient air quality at the boundary of the RMC premises shall meet the following ambient air quality standards (24 hrs. average).

Particulate Matter	Standard (not to exceed)
PM_{10}	100 µg/m^3
$PM_{2.5}$	60 µg/m^3

xvi. A good housekeeping practice should be adopted in order to control the fugitive dust generation.

6.3 Water Pollution Control Measures

i. Permission shall be obtained from the Competent Authority on water usages as per prevailing rules under State Govt. and Central Govt. These permission letters shall be submitted to SPCB during online application of CTE and CTO.

ii. Collection-cum-settling tank of adequate capacity with a minimum retention time of 24h with a provision of recycling the wastewater shall be constructed. All the wastewater generated from the RMC should be channelized to the collection-cum-settling tank.

iii. Garland drains with appropriate bunds should be provided connecting all potential sources of wastewater generation like wheel washing, drum washing, vehicle washing, floor washing etc. Rainwater and surface runoff should be channelized to the collection cum settling tank.

iv. The treated wastewater should be recycled for preparation of concrete mix, dust suppression, vehicle washing etc. so as to minimize utilization of fresh water.

v. All washing activities should be carried out inside the designated premises of the RMC plant. Under no circumstances the washing should be carried out outside the plant premises.

vi. Appropriate drainage and collection facility shall be provided to collect and re-use surface run-off during rain.

6.4 Solid Waste Management

i. There should be dedicated solid waste storage area inside the RMC plant premises.

ii. The solid waste generated from the RMC other than hazardous waste and empty cement / fly ash packaging bags should be managed as per the Construction and Demolition (C&D) Waste Management Rules, 2016.

iii. The empty cement and fly ash packaging bags used if any should be managed as per Plastic Waste Management Rule, 2016 and amendments thereafter.

iv. Solid waste from transit mixture washing, debris / sludge generated from collection cum settling tank of RMC plant should be either reused in the process or disposed of at designated site identified by concern local body, for disposal of debris / construction waste.

v. There should not be any open dumping of materials or waste outside the RMC premises to avoid creating public nuisance.

vi. In RMC plants the used oil, waste oil and the waste containing oil generated from the equipment and transporting vehicles should be handed over to authorized recyclers and re-processers under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

6.5 Noise Pollution Control and Mitigation

i. Necessary preventive measures shall be taken so that noise shall conform to National Ambient Air Quality standards and standards for noise in

industrial area as notified by CPCB under Noise Pollution (Regulation and Control) Rules, 2000.

ii. All the equipment and machinery should be maintained properly so as to control noise pollution and comply with CPCB regulation.

6.6 Other Mitigation Measures

i. A good housekeeping practice should be adopted for pollution control and waste management inside the RMC plant premises.

ii. Under alternate power backup provision, necessary steps should be taken to comply with provisions of Air (PCP) Act, 1981. Suitable conditions should be imposed in this regard during issue of Consent to Establish by SPCB, Odisha.

iii. In case of any environmental pollution or degradation in surrounding areas or localities due to operation of RMC, the remediation and restoration measures should be carried out by the proprietor of RMC plant. Under failure of carrying out remediation and restoration measures, SPCB, Odisha shall initiate appropriate action as applicable under Water (PCP) Act, 1974, Air (PCP) Act, 1981 and E (P) Act, 1986.

References:

i. Environmental Guidelines for Ready-Mix Concrete (RMC) Plant published by Gujrat Pollution Control Board, Gandhinagar, Gujrat; July 2024.

ii. Environmental Guidelines For Ready Mixed Concrete Plants; Pinki Rani1, Parveen Kumar 2 Department of Civil Engineering, World Institute of Technology, Haryana; © 2019 Journal of Emerging Technologies and Innovative Research (JETIR) April 2019, Volume 6, Issue 4.

iii. *Report on Ready Mix Concrete (RMC) Plant by Tamilnadu Pollution Control Board, Tamilnadu, 2017.*

iv. *Guidelines for Ready Mix Plant (RMC) for siting criteria of RMC plant in the State of Maharashtra; RMC Gazette Notification Dtd. 07-11-2016 of Maharashtra Pollution Control Board.*

v. *Indian Standard (IS) 4926:2003 Ready Mix Concrete Code of Practice (Second Revision).*

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Consent to Establish Cell, SPCB, Odisha, Bhubaneswar, 2024

OSPCB-MSW-MISC-0001-2023/2/2024