

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI
Original Application No. 734/2024
(IA No. 264/2024)

In the matter of: -

RWA Sector Sigma 2

Applicant

Vs.

Union of India & Ors.

Respondent

Index

S No.	Particulars.	Page No.
1.	Short reply on behalf of Central Pollution Control Board (CPCB) respondent no. 2 in compliance to Hon'ble NGT order dated 05.07.2024 in O.A. No. 734/2024 (IA No/ 264/2024).	
2.	Annexure I (A) - A copy of letter dated 07.03.2016, issued by CPCB to all SPCBs/PCCs regarding modified directions U/s 18(1)(b).	
3.	Annexure I (B) - A copy of letter dated 12.01.2021 issued by CPCB to SPCBs/PCCs regarding Harmonization Classification of Industrial Sectors.	
4.	Annexure II - A copy of Guidelines on Environmental Management of Construction & Demolition (C & D) Wastes issued by CPCB on March, 2017.	
5.	Annexure III - A copy of letter dated 07.08.2024, issued by CPCB to UPPCB regarding Improper management and misuse of green belts in Sector Sigma 2, Greater Noida, U.P.	
6.	Annexure IV - A copy of letter dated 07.08.2024, issued by CPCB to Greater Noida Industrial Development Authority, regarding Improper management and misuse of green belts in Sector Sigma 2, Greater Noida, U.P.	
7.	Annexure V - A copy of reminder letter dated 17.09.2024, issued by CPCB to UPPCB regarding Improper management and misuse of green belts in Sector	

	Sigma 2, Greater Noida, U.P.	
8.	Annexure VI- A copy of reminder letter dated 17.09.2024, issued by CPCB to Greater Noida Industrial Development Authority, regarding Improper management and misuse of green belts in Sector Sigma 2, Greater Noida, U.P.	
9.	Annexure VII- A copy of Hon'ble NGT order dated 05.07.2024 in O.A No. 734/2024 (IA No. 264/2024)	



**Filed by Advocate Atif Suhrawardy
(On behalf of Central Pollution Control Board)**

Place: Delhi
Dated:23.09.2024

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

Original Application No. 734/2024

(IA No. 264/2024)

In the matter of: -

RWA Sector Sigma 2

Applicant

Vs.

Union of India & Ors.

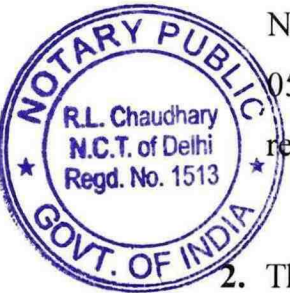
Respondents

**SHORT REPLY ON BEHALF OF RESPONDENT NO. 2, CENTRAL
POLLUTION CONTROL BOARD (CPCB)**

1. That, Hon'ble NGT, vide notice dated 18.07.2024, arrayed CPCB as Respondent No. 2 and has directed CPCB to file its reply as directed vide order dated 05.07.2024 passed by this Hon'ble Tribunal in the present O.A. and the present reply affidavit is being filed by CPCB in adherence to order dated 05.07.2024.

2. That at the outset, the answering respondent deny all claims, contentions, allegations and averments against answering respondent CPCB in the above Original Application (OA) contrary to anything stated or submitted in this reply. Nothing in the OA may be deemed to have been accepted or admitted by the answering Respondent for want of a specific denial, save any averment which has been expressly admitted hereinafter.

3. That, CPCB is a statutory Board constituted under Section 3 of The Water (Prevention and Control of Pollution) Act, 1974. It performs the functions under The Water (Prevention and Control of Pollution) Act, 1974, The Air (Prevention



and Control of Pollution) Act, 1981, and The Environment (Protection) Act, 1986.

REPLY

4. That the applicant in the present O.A. has primarily raised the issue of Grievance related to improper management and misuse of green belts in Sector Sigma 2, Greater Noida, Gautam Budh Nagar, U.P. It has been alleged by the applicant in O.A. that there is illegal rampant encroachment, misuse of green belts, unauthorized traffic through green belts and pollution caused by dumping waste and commercial construction on the green belts in violation of environmental norms and inaction of respondents and its consequent effects have also been brought out. In reply, the following is thereby submitted;
5. That, with regard to commercial construction on the green belts, the deponent states as here in below: -
 - i. The Clause 2 of the Environmental Impact Assessment Notification, 2006 (hereinafter referred to as EIA Notification, 2006) provides for the “**Requirements of prior Environmental Clearance** (hereinafter referred to as “**EC**”)” and as per the above mentioned clause, the projects or activities which are falling under the category ‘A’ of the Schedule of the EIA Notification, 2006; the project proponent shall obtain the EC from the Ministry of Environment, Forest and Climate Change (hereinafter referred to as ‘MoEF & CC’) and the projects which are falling under the ‘B’ category of the Schedule of the EIA Notification, 2006; the project proponent shall obtain EC from the State Environment Impact Assessment Authority (hereinafter referred to as ‘SEIAA’) before carrying out the construction works.



- ii. CPCB has classified building and construction projects into red/orange category on the basis of their sewage generation potential. Projects generating sewage between 50 to 100 KLD are categorized as orange, however, project generating more than 100 KLD sewage are categorized as red. Copy of directions issued by CPCB vide letter dated 07.03.2016 and subsequent letter dated 12.01.2021 regarding classification of Building and Construction Projects is enclosed as **Annexure-I(A)** and **Annexure-I(B)**, respectively. All projects under red and orange categories are required to obtain consent from respective SPCB/PCC. It is submitted that Building and construction projects generating sewage less than 50 KLD are also required to treat/manage the sewage with appropriate system such as soak pit, septic tank, STP, etc. or direct discharge in sewer connected with terminal STP, etc. Further, Guidelines of the "Manual on Sewerage and Sewage Treatment System (2013)", published by the Central Public Health and Environmental Engineering Organization (CPHEEO), and as amended from time to time are to be followed.

6. In context of issues like dumping construction and demolition waste, it is submitted that: -

- The Ministry of Environment, Forest & Climate Change has notified the Construction and Demolition Waste Management Rules, 2016 (Hereinafter referred to as "the C&D WM Rules, 2016") vide S.O. 317 (E) dated 29th March 2016. Prior to the C&D WM Rules, 2016, the C&D waste was dealt under the provisions of Municipal Solid Wastes (Management and Handling) Rules, 2000. As per Rule 4 of the C&D WM Rules, 2016, the waste generators are entrusted with



the primary responsibility of collection, segregation and storage of C&D waste generated.

- That, as per Rules 6(4) and 6(5) of the C&D WM Rules, 2016, the local authority is responsible for the transportation of the collected C&D waste, establishment of the processing facility and disposal of the C&D waste in best possible manner either through own resources or by appointing private operators.
- As per Rule 8(1) of the C&D WM Rules, 2016, the State Pollution Control Boards or Pollution Control Committees (hereinafter called as SPCBs/PCCs) should monitor the implementation of the C&D W M Rules, 2016 by the concerned local bodies and the competent authorities.
- That, in pursuant of the Rule 10 sub-rule 1(a) of the C&D W M Rules, 2016, the guideline titled “ENVIRONMENTAL MANAGEMENT OF C&D WASTES” has been prepared and issued by CPCB in March, 2017. Copy of the Guidelines had been uploaded on the Website of CPCB and available at the following link: <https://cpcb.nic.in/technical-guidelines-5/>. True copy of the same is annexed herein and marked as **Annexure-II**.



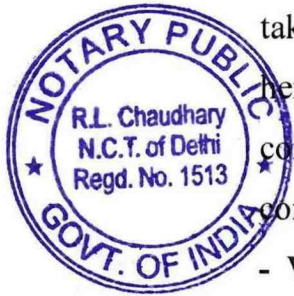
7. Further, this answering respondent humbly submits that as per information received from Uttar Pradesh Pollution Control Board, in the matter of OA No. 911/2022 (I. A. No.14/2023 and I. A. No. 16/2023) titled Prof. Dr. Sanjeev Bagai & Ors. Versus Department of Environment, GNCTD & Ors, Uttar Pradesh State has following Acts for the protection and management of trees in the State:

- I. In Forest area, the trees have been protected in accordance with Indian Forest Act, 1927

II. For regulation of felling of trees outside Forest area, the U.P. Protection of trees Act, 1976 are applicable.

That it is humbly submitted that, the responsibility of implementation of the provisions as per the statute mentioned above is with the Concerned Authorities in the State.

8. That, the applicant alleged in the. OA that, there are occurrence of violations under the Uttar Pradesh Industrial Area Development Act, 1976; Master Plan 2021 etc. and there is inaction by the authorities, even after multiple communications made by the applicant. In this context, it is humbly submitted that, occurrence of violations, if any, under the concerned Acts/Rules are to be dealt by the respective agency as per provisions stipulated under such Acts/Rules.
9. That, Central Pollution Control Board vide letters dated 07/08/2024 has requested the Uttar Pradesh Pollution Control Board and Greater Noida Industrial Development Authority to examine the matter under reference and to take action as required. (Copies of communication dated 07/08/2024 are annexed herein and marked as **Annexure - III & Annexure - IV**). Reminders in this context have also been issued vide Letters dated 17/09/2024 (Copies of communication dated 17/09/2024 are annexed herein and marked as **Annexure - V & Annexure - VI**). Response to the aforesaid communications is still awaited.
10. The answering respondent No. 2 craves leave of this Hon'ble Tribunal for filing additional reply, if required, in future.



11. That, in view of the submissions made in preceding paragraphs, the answering respondent i.e. CPCB shall abide by the orders/directions passed by the Hon'ble Tribunal in the instant matter.



A handwritten signature in blue ink that reads "Sharandeep".

(Sharandeep Singh)

Scientist 'E'

Central Pollution Control Board

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

Original Application No. 734/2024

(IA No. 264/2024)

In the matter of: -

RWA Sector Sigma 2

Applicant

Vs.

Union of India & Ors.

Respondents

**SHORT REPLY ON BEHALF OF RESPONDENT NO. 2, CENTRAL
POLLUTION CONTROL BOARD (CPCB)**

I, Sharandeep Singh, working as Scientist 'E' in Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, Delhi, do hereby solemnly affirm and sincerely state on oath as follows: -

1. That I, the deponent herein is the authorized representative to represent the Respondent CPCB in the present case, and as such, I am well conversant with the facts and circumstances of the present case on the basis of the information derived from the official records, and hence, I am competent to verify, sign and swear this affidavit on behalf of the Respondent CPCB.

2. That the accompanying short reply may be read part and parcel of the present affidavit.

3. That the accompanying short reply has been drafted and filed under my instructions and authority the contents thereof are true and correct on the basis of the records maintained during ordinary course of business of CPCB and



available records and documents and the contents of the same are read over and explained to me and are not repeated herein for the sake of brevity.

Sharaandeep

DEPONENT

शरणदीप सिंह / Sharaandeep Singh
वैज्ञानिक 'ई' / Scientist 'E'
केंद्रीय प्रदूषण नियंत्रण बोर्ड
Central Pollution Control Board
(पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार)
(Mo Environment, Forest & Climate Change, Govt. of India)
परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली-110032
Parvesh Bhawan, East Arjun Nagar, Delhi-110032

VERIFICATION

23 SEP 2024

Verified at New Delhi on this day of _____ 2024 that the contents of the above reply are correct and true on the basis of the records of the case as mentioned in the day-to-day affairs of the CPCB. Nothing has been concealed therefrom or mis-stated.

Sharaandeep

DEPONENT

शरणदीप सिंह / Sharaandeep Singh
वैज्ञानिक 'ई' / Scientist 'E'
केंद्रीय प्रदूषण नियंत्रण बोर्ड
Central Pollution Control Board
(पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार)
(Mo Environment, Forest & Climate Change, Govt. of India)
परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली-110032
Parvesh Bhawan, East Arjun Nagar, Delhi-110032



ATTESTED
[Signature]
NOTARY PUBLIC
GOVT. OF INDIA

23 SEP 2024



केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
(पर्यावरण एवं वन मंत्रालय, भारत सरकार)
(MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

No.B-29012/ESS(CPA)/2015-16/

March 07, 2016

To

The Chairman
All the State Pollution Control Boards / Pollution Control Committees
(List Attached)

SUB: MODIFIED DIRECTIONS UNDER SECTION 18(1)(b) OF THE WATER (PREVENTION & CONTROL OF POLLUTION) ACT, 1974 and THE AIR (PREVENTION & CONTROL OF POLLUTION) ACT, 1981 REGARDING HARMONIZATION OF CLASSIFICATION OF INDUSTRIAL SECTORS UNDER RED / ORANGE / GREEN / WHITE CATEGORIES.

WHEREAS, under section 16 (2)(b) of the Water (Prevention and Control of Pollution) Act, 1974 and under Section 16 (2)(c) of the Air (Prevention & Control of Pollution) Act, 1981, one of the functions of the Central Pollution Control Board (CPCB), constituted under the Water (Prevention and Control of Pollution) Act, 1974, is to coordinate activities of the State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs); and

WHEREAS, under section 16 (2)(c) of the Water (Prevention and Control of Pollution) Act, 1974 and under Section 16 (2)(d) of the Air (Prevention & Control of Pollution) Act, 1981, one of the functions of the CPCB is to provide technical assistance and guidance to SPCBs and PCCs; and

WHEREAS, it was brought to the notice of CPCB, that different SPCBs /PCCs were following different criteria for classification of industrial sectors under Red/Orange/ Green category and that classification was being used by the SPCBs/PCCs for grant of consents to industries and for Inventorization / surveillance of industries.

WHEREAS, the issue regarding classification of industries was deliberated upon in the 56th Conference of Chairmen & Member Secretaries of CPCB & SPCBs/PCCs held on August 31, 2010 and a working group comprising of representatives from SPCBs & CPCB was constituted to prepare a consolidated list of industrial sectors falling under Red/Orange/Green category to bring uniformity in classification of industrial sectors across the country;

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032

'Parivesh Bhawan', East Arjun Nagar, Delhi - 110032

दूरभाष/Tel. : 43102030, फ़ैक्स/Fax : 22305793, 22307078, 22307079, 22301932, 22304948

ई-मेल/e-mail : cpcb@nic.in वेबसाइट/Website : www.cpcb.nic.in

WHEREAS, the report prepared by the Working Group was discussed in the 57th Conference of Chairmen & Member Secretaries of CPCB & SPCBs/PCCs held in Delhi on September 15, 2011, wherein some modifications were proposed;

WHEREAS, the final report of the working group was prepared, incorporating the suggestions/observations made in the 57th Conference of Chairmen and Member Secretaries of CPCB & SPCBs/PCCs and in exercise of the powers delegated to the Chairman, CPCB under Section 18(1)(b) of the Water Act, 1974, following directions were issued for compliance to all SPCBs/PCCs to maintain uniformity in categorization of industries as red, orange and green as per list finalized by CPCB, which identified 85 types of industrial sectors as 'Red', 73 industrial sectors as 'Orange' and 86 sectors as 'Green':

a). To maintain uniformity in categorization of industries under Red/ Orange/Green category, the SPCBs /PCCs shall adopt the list as finalized by CPCB based on the recommendations of that Working Group for grant of Consent, inventorization of industries under Red, Orange and Green categories and other related activities.

(b). The SPCBs/PCCs shall revise the list of Red, Orange and Green categories of industries operating in their jurisdiction based on the criteria specified in the final report of that Working Group and submit the same to CPCB within 90 days in hard copy as well as soft copy;

WHEREAS, later-on, it was observed that the process of categorization thus far was primarily based on the size of the industries and consumption of resources and pollution due to discharge of emissions and effluents and its likely impact on health was not considered as primary criteria;

WHEREAS, there have been proposals from the SPCBs / PCCs and industrial associations for categorization of the industrial sectors in a more pragmatic manner. The issue was discussed during the national level conference of the Environment Ministers of the States, held in New Delhi during April 06-07, 2015 and also during the Conference of the Chairmen and Member Secretaries of CPCB and SPCBs/PCCs held in New Delhi on April 08, 2015. Accordingly, a 'Working Group' comprising of the Members from Central Pollution Control Board and State Pollution Control Boards representing the States of Andhra Pradesh, Punjab, Tamilnadu, West Bengal, Madhya Pradesh and Maharashtra, was constituted to revisit the criteria of categorization of industries and suggest rationale based on pollution potential for categorization of industrial sectors and adopting it for implementation of pollution control plan;

WHEREAS, the Working Group has developed the criteria of categorization of industrial sectors based on the concept of Pollution Index which is a function of the emissions (air pollutants), effluents (water pollutants), hazardous wastes generated and consumption of resources. For this purpose the references are taken from the the Water (Prevention and Control

of Pollution) Cess (Amendment) Act, 2003, Standards so far prescribed for various pollutants under Environment (Protection) Act , 1986 and Doon Valley Notification, 1989 issued by MoEFCC. The Pollution Index (PI) of any industrial sector is a number from 0 to 100 and the increasing value of PI denotes the increasing degree of pollution load from the industrial sector;

WHEREAS , based on the series of consultations with SPCBs, different Government / Non-government Institutions including industries and MoEFCC , the following criteria on 'Range of Pollution Index 'for the purpose of categorization of industrial sectors has been finalized:

- o Industrial Sectors having Pollution Index score of 60 and above - Red category
- o Industrial Sectors having Pollution Index score of 41 to 59 -Orange category
- o Industrial Sectors having Pollution Index score of 21 to 40 -Green category
- o Industrial Sectors having Pollution Index score incl. & upto 20 -White category

WHEREAS, based on the revised criteria, the 'Final Report on Revised Categorization of Industrial Sectors under Red/Orange/Green/White' has been evolved. The 'Categorization' is based on the relative pollution potential of the industrial sectors and grouping of the industrial sectors based on the use of raw materials, manufacturing process adopted and pollutants likely to be generated;

WHEREAS, based on relative Pollution Index, the number of industries in various categories are as under :

- i. The Red category of industrial sectors: 60
- ii. The Orange category of industrial sectors: 83
- iii. The Green category of industrial sectors: 63 and
- iv. The Newly introduced White category: 36

WHEREAS, there shall be no necessity of obtaining the Consent to Operate" for White category of industries and an intimation to concerned SPCB / PCC shall suffice;

WHEREAS, the purpose of categorization is to ensure that the industry is established in a manner consistent with the environmental objectives and to prompt industrial sectors to adopt cleaner technologies, ultimately resulting in generation of no or minimum pollutants.

WHEREAS the new categorization system shall also facilitate in self-assessment by industries;

Now, therefore, in exercise of the powers delegated to the Chairman, CPCB under Section 18(1)(b) of the Water (Prevention & Control of Pollution) Act, 1974 and Section 18(1)(b) of the Air (Prevention & Control of Pollution), Act , 1981 the earlier Directions issued in June 2012 in the context of categorisation of industries as Red, Orange & Green are withdrawn with immediate effect and following '**Directions**' are hereby issued for compliance by all SPCBs and PCCs :

1. That the SPCBs and PCCs shall adopt the Revised Criteria of categorization of industrial sectors as detailed in table nos. F1, F2, F3 and F4 and Revised Lists of Red, Orange, Green and White categories of industrial sectors, presented at table no. G2, G3, G4 and G5 respectively, in the 'Final Report' as attached herewith immediately.
2. That all pending applications for consideration of 'Consent to Establish' and 'Consent to Operate' and future such applications shall be processed as per revised criteria.
3. That the SPCBs and PCCs will provide the list of industries identified in each category existing in the State which have been considered for grant of consents. SPCBs/PCCs will forward the list of such industries before 31.05.2016 and the same will be uploaded on the websites of respective SPCB/PCC.
4. That the 'Revised Lists of Red, Orange, Green and White category of industrial sectors' shall be used by the SPCBs and PCCs for Consent Management and inventorization of industries under Red, Orange, Green and White categories. Siting of industries shall be only in conforming areas. SPCBs / PCCs shall evolve sector specific plans for control of pollution and industrial surveillance for verifying compliance.
5. That the SPCBs and PCCs shall revise /prepare the inventory of Red, Orange, Green and White categories of industries operating in their jurisdiction based on the revised criteria specified in the Final Report and submit the same to CPCB within 90 days i.e., before 30.05.2016 in hard copy as well as soft copy.
6. That the listed category of industries or those identified later-on under different categories shall not be linked to sanction of loan / finance or bank proceedings.
7. That any further addition of any new or left-over industrial sector and their categorization which is not listed in the revised list of Red, Orange, Green and White industrial sectors, shall be done at the level of concerned SPCB /PCC following revised criteria & guidelines as detailed in the attached document and no concurrence of CPCB shall normally be required. It is further clarified that while categorizing the industries, fractional numbers shall be rounded off to nearest integer.

The SPCBs/PCCs shall acknowledge the receipt of directions and submit the 'Action Taken Report' in compliance with these directions to CPCB before 15.04.2016.

(Arun Kumar Mehta)
Chairman
7/3/16

Copy to:

1. The Chief Secretary of all the States and UTs
2. The Secretary ,
Ministry of Micro, Small and Medium Entrepreneurs
Udyog Bhawan, Rafi Marg, New Delhi - 110 011
3. The Secretary ,
Ministry of Heavy Industries
Udyog Bhawan, Rafi Marg, New Delhi - 110 011
4. The Secretary,
Ministry of New and Renewable Energy
Block-14, CGO Complex,
Lodhi Road, New Delhi-110 003,
5. The Advisor(CP Division)
Ministry of Environment ,Forests and Climate Change
Indira Paryavaran Bhawan
Jor Bagh Road, New Delhi - 110 003
6. All Zonal Offices of CPCB

(A. B. Aklkar) 7.3.16
Member Secretary

Final Document
on
Revised
Classification
of
Industrial Sectors
Under

Red, Orange, Green and White Categories
(February 29, 2016)



Central Pollution Control Board
Delhi

Executive Summary

Categorization of Industrial Sectors under Red, Orange, Green and White Category

The Ministry of Environment, Forest and Climate Change (MoEFCC) had brought out notifications in 1989, with the purpose of prohibition/ restriction of operations of certain industries to protect ecologically sensitive Doon Valley. The notification introduced the concept of categorization of industries as " Red", "Orange "and "Green" with the purpose of facilitating decisions related to location of these industries. Subsequently, the application of this concept was extended in other parts of the country not only for the purpose of location of industries, but also for the purpose of Consent management and formulation of norms related to surveillance / inspection of industries.

The concept of categorization of industries continued to evolve and as different State Pollution Control Boards interpreted it differently, a need arose to bring about necessary uniformity in its application across the country. In order to harmonize the 'Criteria of categorization', Directions were issued by CPCB under Section 18(1)(b) of the Water (Prevention & Control of Pollution) , Act, 1974 to all SPCBs/PCCs to maintain uniformity in categorization of industries as red, green and orange as per list finalized by CPCB, which identified 85 types of industrial sectors as 'Red', 73 industrial sectors as 'Orange' and 86 sectors as 'Green'.

The process of categorization thus far was primarily based on the size of the industries and consumption of resources. The pollution due to discharge of emissions & effluents and its likely impact on health was not considered as primary criteria. There was demand from the SPCBs / PCCs and industrial associations for categorization of the industrial sectors in a more transparent manner. Accordingly, the issue was discussed thoroughly during the national level conference of the Environment Ministers of the States, held in New Delhi during April 06-07, 2015 and a 'Working Group' comprising of the members from CPCB, APPCB, TNPCB, WBPCB, PPCB, MPPCB and Maharashtra PCB is constituted to revisit the criteria of categorization of industries and recommend measures for making the system transparent and rational.

The Working Group has developed the criteria of categorization of industrial sectors based on the Pollution Index which is a function of the emissions (air pollutants), effluents (water pollutants), hazardous wastes generated and consumption of resources. For this purpose the references are taken from the the Water (Prevention and Control of Pollution) Cess (Amendment) Act, 2003, Standards so far prescribed for various pollutants under Environment (Protection) Act , 1986 and Doon Valley Notification, 1989 issued by MoEFCC. The Pollution Index PI of any industrial sector is a number from 0 to 100 and the increasing value of PI denotes the increasing degree of pollution load from the industrial sector. Based on the series of brain storming sessions among CPCB, SPCBs and MoEFCC , the following criteria on 'Range of Pollution Index 'for the purpose of categorization of industrial sectors is finalized.

- | | |
|---|------------------|
| ○ Industrial Sectors having Pollution Index score of 60 and above | - Red category |
| ○ Industrial Sectors having Pollution Index score of 41 to 59 | -Orange category |
| ○ Industrial Sectors having Pollution Index score of 21 to 40 | -Green category |
| ○ Industrial Sectors having Pollution Index score incl.&upto 20 | -White category |

The newly introduced White category of industries pertains to those industrial sectors which are practically non-polluting such as Biscuit trays etc. from rolled PVC sheet (using automatic vacuum forming machines), Cotton and woolen hosiers making (Dry process only without any dying/washing operation), Electric lamp (bulb) and CFL manufacturing by assembling only, Scientific and mathematical instrument manufacturing, Solar power generation through photovoltaic cell, wind power and mini hydel power (less than 25 MW).

The salient features of the 'Re-categorization' Exercise are as follows :

- Due importance has been given to relative pollution potential of the industrial sectors based on scientific criteria . Further, wherever possible, splitting of the industrial sectors is also considered based on the use of raw materials, manufacturing process adopted and in-turn pollutants expected to be generated.
- The Red category of industrial sectors would be 60.
- The Orange category of industrial sectors would be 83.
- The Green category of industrial sectors would be 63.
- Newly introduced White category contains 36 industrial sectors which are practically non-polluting.
- There shall be no necessity of obtaining the Consent to Operate'' for White category of industries. An intimation to concerned SPCB / PCC shall suffice.
- No Red category of industries shall normally be permitted in the ecologically fragile area / protected area.

The purpose of categorization is to ensure that the industry is established in a manner which is consistent with the environmental objectives. The new criteria will prompt industrial sectors willing to adopt cleaner technologies, ultimately resulting in generation of fewer pollutants. Another feature of the new categorization system lies in facilitating self-assessment by industries as the subjectivity of earlier assessment has been eliminated. This 'Re-categorization' is a part of the efforts, policies and objective of present government to create a clean & transparent working environment in the country and promote the Ease of Doing Business.

Other similar efforts of the present government include installation of Continuous Online Emissions/ Effluent Monitoring Systems in the polluting industries, Revisiting of the CEPI (Comprehensive Environment Pollution Index) concept for assessment of polluted industrial clusters, Revision of existing industrial Emission/Effluent discharge standards, initiation of special drive on pollution control activities in Ganga River basin and many more in coming future.

Revised Criteria of Categorization of Industries

“Securing industrial pollution control in accordance with the Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981 by linking with categorization of industries, consent management and vigilance – ‘In context of Red, Orange, Green and White categories of industries’”

A: Genesis of Categorization:

- The Ministry of Environment, Forest and Climate Change (MoEFCC) had brought out notifications, which inter-alia refers to Prohibition/ Restriction on operation of industries to protect ecologically sensitive areas or areas of specific importance. This has for the first time brought the concept of categorization of industries to “Red”, “Orange” and “Green” and restrict their operation in certain areas of importance. Therefore, it is at-once interpreted that Red, Orange and Green categorization is linked with location specific needs.
- The notification of MoEF was first brought on 2nd February, 1989 in case of “Restriction on location of industries, mining operations and other developmental activities in Doon Valley in “Uttarakhand” and thereafter another notification on 24th February 1999 regarding restriction on the setting up of industries in Dahanu Taluka in Maharashtra. The categorization had been made mainly on the basis of size of the industries, man power and consumption of resources.
- However, in other parts of the country, there have been variations in context to the classification of industries under Red, Orange and Green categories. SPCBs / PCCs were following their own criteria in different States thereby creating confusion.
- In order to harmonize the ‘Criteria of categorization’, a ‘Working Group’ was formed as per resolution passed during the 57th Conference of the Chairmen & Member Secretaries of CPCB and SPCBs. Based on the recommendations of the Working Group, Directions dated 4/6/2012 under Section 18(1)(b) of the Water

(Prevention & Control of Pollution) , Act, 1974 were issued to all SPCBs/PCCs with the effects to maintain uniformity in categorization of industries as red, green and orange as per list finalized by the Working Group. This indicative list included 85 types of industrial sectors as 'Red', 73 industrial sectors as 'Orange' and 86 sectors as 'Green'. However, these identified categories have not been assigned with scores as per existing criteria/ or any new criteria

B: Categorization criteria used by SPCBs/PCCs:

SPCBs and PCCs use the criteria of Red, Orange and Green categories for consent management and vigilance purposes for carrying out inspections to verify compliance to the stipulated standards. However the above categorization do not emphasize on sector-specific plan for control of pollution in accordance with priority based on pollution index.

C: Gap in the process:

1. The categorization has been made mainly on the basis of size of the industries and consumption of resources. The pollution due to discharge of emissions & effluents and its impact on health was not considered as primary criteria.
2. Categorization was on random basis, no scoring system was adopted.

D: Resolutions made during National Level Conferences

The issue was discussed thoroughly during the following national level conferences held in New Delhi:

- Conference of the Environment Ministers of Central Government and State Governments during April 06-07, 2015
- 59th Conference of Chairmen & Member Secretaries of Pollution Control Boards / Pollution Control Committees held on April 08, 2015

Accordingly following resolutions were made during the Conferences:

1. A 'Working Group' comprising of the members from CPCB, APPCB, TNPCB, WBPCB, PPCB, MPPCB and Maharashtra PCB is constituted.
2. This WG shall revisit the categorization of industries that is based on pollution index criteria & environmental issues such as generation of emission, effluent and hazardous wastes.
3. The categorization will be done on the basis of composite score (0-100 marks) of Pollution Index given in accordance with the following weightage.

Air Pollution Score based on parameters namely PM, CO, NO _x , SO _x , HMs, Benzene, Ammonia and other toxic parameters relevant to the industry.	40 Marks
Water Pollution Score based on parameters namely pH, TSS, NH ₃ -N, BOD, Phenol and other toxic pollutants relevant to the industry.	40 Marks
Hazardous wastes (land fillable, incinerable, recyclable) as generated by the industry.	20 Marks
<p>Note :</p> <ul style="list-style-type: none"> • Parameters to be decided on the basis of the nature of the wastes generating from the industrial sector. • Industries having only either water pollution or air pollution, the score will be normalized wrt 100. 	

4. Based on the score of the Pollution Index, following categorization be made :
 - Type of industries, if scores 60 and above be categorized as Red
 - Type of industries, if scores from 30 to 59 be categorized as Orange
 - Type of industries, if scores from 15 to 29 be categorized as Green
 - Type of industries, if less than 15 be categorized as White or non-polluting industry.
5. SPCBs/PCCs may issue consent to the industries
 - Red category of industries for 5 years.
 - Orange category of industries for 10 years.
 - Green category of industries for 15 years.
 - No necessity of consent for non-polluting industries.
6. No red categories of industries will be permitted to establish in eco-sensitive areas and protected areas.

E: Follow-up Actions made on the Resolutions :-

- Accordingly, a Committee comprising the Chairmen of CPCB, APPCB, TNPCB, MPPCB, MPCB, PPCB, WBPCB and MS, CPCB was constituted vide CPCB OM dated

23.04.2015 to review & classify industrial sectors into different categories based on criteria of respective pollution potential.

- The categorization is made on the basis of following:
 - Quality of emissions (air pollutants) generated
 - Quality of effluents (water pollutants) generated
 - Types of hazardous wastes generated
 - Consumption of resources

- Reference is taken from the following :
 - The Water (Prevention and Control of Pollution) Cess Act, 1977
 - Standards so far prescribed for various pollutants under the Environment (Protection) Act , 1986
 - Doon Valley Notification, 1989 issued by MoEF.

F : Scoring Methodology :

The details on the scoring methodology in respect of the aforesaid 3 components is presented in the following tables F-1 to F-4 .

Table F-1 : Water Pollution Scoring Methodology

Sl. No.	Activity / Types of Discharges	Score
Part A : Score W1 : Score based on types of expected criteria water-pollutants present in industrial processes waste waters. Maximum of the following seven categories is to be taken.		
W11	Waste-water which is polluted and the pollutants are - <ul style="list-style-type: none"> • not easily biodegradable (very high strength waste waters having BOD > 5000 mg/l); or • toxic; or • both toxic and not easily biodegradable. (Presence of criteria water pollutants having prescribed standard limits up-to 10 mg/l or having BOD > 5000 mg/l). For details appendix 1 may be referred)	30
W12	Non-toxic high strength polluted waste-water having BOD in the range of 1000-5000 mg/l and the pollutants are biodegradable. <p>(Presence of criteria water pollutants having prescribed standard limits from 11 mg/l to 250 mg/l and having BOD strength in the range of 1000-5000 mg/l) . For details appendix 1 may be referred)</p>	25
W13	Non toxic- polluted waste-water having BOD below 1000 mg/l and the pollutants are easily biodegradable. <p>(Presence of criteria water pollutants having prescribed standard limits from 11mg/l to 250 mg/l and having BOD strength below 1000 mg/l) . For details appendix 1 may be referred)</p>	20
W14	Waste-water generated from the chemical processes and which is polluted due to presence of high TDS (total dissolved solids) of inorganic nature. <p>(Presence of criteria water pollutants having prescribed standard limits more than 250 mg/l. For details appendix 1 may be referred)</p>	15
W15	Waste-water generated from the physical unit operations / processes and which is polluted due to presence of TDS (total dissolved solids) of inorganic nature and of natural origin like fresh-water RO rejects, boiler blow-downs, brine solution rejects etc. <p>(Presence of criteria water pollutants having prescribed standard limits more than 250 mg/l. For details appendix 1 may be referred)</p>	12
W16	Non-toxic polluted waste-water from those units which are: <ul style="list-style-type: none"> • Having the overall waste-water generation less than 10 KLD and • The pollutants are easily bio-degradable having BOD below 200 mg/l which can be easily treated in a single stage ASP (activated 	12

	sludge process) based Effluent Treatment Plant. Note : This is a special category and is applicable to only those units having over-all liquid waste generation less than 10 KLD with low strength organic load.	
W17	Waste-water from cooling towers and cooling-re-circulation processes	10
Part B : Score W2 : Score based on huge discharges of any kind (Penalty Clause)		
W2	Industry having overall liquid waste generation of 100 KLD or more including industrial & domestic waste-water.	10
Overall Water Pollution Score $W = W1+W2$		

- **Water Pollutants covered under Group W11:**
 - ✓ Free available Chlorine , Total residual chlorine, Fluoride (as F), Sulphide (as S), Free Ammonical Nitrogen, Dissolved phosphates (as P), Free ammonia (as NH₃), Nitrate Nitrogen, Mercury (As Hg), Selenium (as Se), Hexa-valent chromium (as Cr + 6), Lead (as Pb), Tin , Vanadium (as V), Cadmium (as Cd), Manganese (as Mn), Total chromium (as Cr), Copper (as Cu), Iron (as Fe), Nickel (as Ni), Zinc (as Zn), Benzene, Arsenic (as As), Benzo-a-pyrene, Cyanide (as CN), Phenolic compounds (as C₆H₅OH) , Adsorbable Organic Halogens (AOX), Boron and /or
 - ✓ BOD strength of waste water > 5000 mg/l
- **Water Pollutants covered under Group W12:**
 - ✓ Sodium Absorption Ratio (SAR) , Biochemical oxygen demand (3 days at 27°C), Total Kjeldahl nitrogen (TKN), Ammonical nitrogen (as N), Suspended solids, Total nitrogen (as N), Chemical oxygen demand, Oils & grease and
 - ✓ BOD strength of waste water is in the range of 1000-5000 mg/l
- **Water Pollutants covered under Group W13:**
 - ✓ Sodium Absorption Ratio (SAR), Biochemical oxygen demand (3 days at 27°C), Total Kjeldahl nitrogen (TKN), Ammonical nitrogen (as N), Suspended solids, Total nitrogen (as N), Chemical oxygen demand and
 - ✓ BOD strength of waste water is below 1000 mg/l
- **Water Pollutants covered under Group W14 and W15:**

Chlorides as Cl, Colour , Total dissolved solids (TDS - Inorganic)
- **Water Pollutants covered under Group W16**
 - ✓ BOD strength of waste water is below 200 mg/l and overall discharge is less than 10 KLD.

Table F-2 : Air Pollution Score

Sl. No.	Air Pollutants Group	'Range of Prescribed Standard' of criteria pollutants	Marks
Part 1 : Score A1 = Score based on types of expected criteria Air Pollutants present in the emissions . Maximum of the following seven categories is to be taken. For details appendix 2 may be referred.			
1	Group A1A	Presence of criteria air pollutants having prescribed standard limits up-to 2 mg/Nm ³	30
2	Group A1B	Presence of criteria air pollutants having prescribed standard from 3 to 10 mg/Nm ³	25
3	Group A1C	Presence of criteria air pollutants having prescribed standard from 11 to 50 mg/Nm ³	20
4	Group A1D	Presence of criteria air pollutants having prescribed standard from 51 to 250 mg/Nm ³	15
5	Group A1E	Presence of criteria air pollutants having prescribed standard from 251 mg/Nm ³ & above.	10
6	Group A1F	<ul style="list-style-type: none"> • Generation of fugitive emissions of Particulate Matters which are: <ul style="list-style-type: none"> ○ Not generated as a result of combustion of any kind of fossil-fuel. ○ Generated due to handling / processing of materials without involving the use of any kind of chemicals. ○ Which can be easily contained /controlled with simple conventional methods 	10
7	Group A1G	<ul style="list-style-type: none"> • Generation of Odours which are : <ul style="list-style-type: none"> ○ Generated due to application of binding gums / cements /adhesives /enamels ○ Which can be easily contained /controlled with simple conventional methods 	10
Part 2 : Score A2 = Score based on consumption of fuels and technologies required for air pollution control :			
6	Group A2F1	<ul style="list-style-type: none"> • All such industries in which the daily consumption of coal/fuel is more than 24 MT/day and the particular (Particulate/gaseous/process) emissions from which can be controlled only with high level equipments / technology like ESPs, Bag House Filters, High Efficiency chemical wet scrubbers etc. 	10
7	Group A2F2	<ul style="list-style-type: none"> • All such industries in which the daily consumption of coal/fuel is from 12 MT/day to 24 MT/day and the particular (Particulate/gaseous/process) emissions from which can be controlled with suitable proven technology. 	5
Overall Air Pollution Score -A = A1 + A2			

- Air pollutants covered under Group A1A:
Cd+Th, Dioxins & Furans, Mercury, Asbestos
- Air Pollutants covered under Group A1B:
HF, Nickel+ Vanadium, HBr, Manganese, Lead, H₂S, P₂O₅ as H₃PO₄
- Air Pollutants covered under Group A1C:
Chlorine, Pesticide compounds, CH₃Cl, TOC, Total Fluoride, Hydrocarbons, NH₃, HCL vapour & Mist, H₂SO₄ Mist, SO₂
- Air Pollutants covered under Group A1D:
CO, PM, CO, NO_x
- Air Pollutants covered under Group A1E:
NO_x with liquid-fuel, SO₂ with liquid-fuel

Table F-3: Hazardous Waste Generation Score

Sl.No.	Types of Hazardous Waste Generated as per Schedule 1 / Schedule 2 of Hazardous Waste (Management, Handling & Trans-boundary Movement) Rules , 2008 . Maximum of the following four categories is to be taken	Score
HW1	<ul style="list-style-type: none"> • Land disposable HW which require special care & treatment for stabilization before disposal. 	20
HW2	<ul style="list-style-type: none"> • Incinerable HW 	15
HW3	<ul style="list-style-type: none"> • Land disposable HW which doesn't require treatment & stabilization before disposal. • High volume low effect wastes such as fly-ash, phspho-gypsum, red-mud, slags from pyro-metallurgical operations, mine tailings and ore beneficiation rejects) 	10
HW4	<ul style="list-style-type: none"> • Recyclable HW, which are easily recyclable with proven technologies. 	10

Table F-4 : Calculation Sheet
Industrial Sector -

1. Water Pollution Score (W)			
Scores	Waste Water Category	Value	
Score on W1			
Score on W2			
Water Pollution Score = W1+W2			
2. Air Pollution Score (A)			
Scores	Air Pollutant Category	Value	
Score on A1			
Score on A2	-	-	
Air Pollution Score = A1+A2			
3. Hazardous Waste Score (HW)			
Score	HW Category	Value	
HW			
Grand Total = W + A + HW			

Note :

- Any of the industrial sector having only either air pollution (A) or water pollution (W) , the score will be normalized to 100 as per the following formula -

$$\text{Normalized Score} = \{100 \times W \text{ (or A)}\} / 40$$

- Any of the industrial sector having air pollution (A) and water pollution (W) both but no hazardous waste generation (H) , the joint score of air & water pollution will be normalized to 100 as per the following formula -

$$\text{Normalized Score} = \{100 \times (W+A)\} / 80$$

- Any of the industrial sector having air pollution (A) & hazardous waste generation (H) but no water pollution (W), the joint score of air pollution & hazardous waste generation will be normalized to 100 as per the following formula -

$$\text{Normalized Score} = \{100 \times (A+H)\} / 60$$

- Any of the industrial sector having water pollution (W) and hazardous waste generation (H) but no air pollution (A), the joint score of water pollution & hazardous waste generation will be normalized to 100 as per the following formula -

$$\text{Normalized Score} = \{100 \times (W+H)\} / 60$$

G : Developments :

- i. The existing Red (85 sectors) , Orange (73 sectors) and Green (86 sectors) i.e a total of 244 industrial sectors have been assessed as per the proposed formula by the Working Group. For this purpose, concerned Engineers / Scientists from the Member SPCBs were also involved & consulted during May 28-29, 2015.
- ii. After careful examination and consideration of the suggestions of concerned stake-holders the “Draft Document on Revised Concept of Categorization of Industrial Sectors “ was prepared by the Committee and circulated to all the SPCBs, PCCs and concerned Ministries for their information & comments. The ‘ Draft Document ’ was uploaded on the website of CPCB also for information & comments of one & all.
- iii. The matter was discussed during the 170th Board Meeting also and issues raised by the Board Members pertaining to some of the industrial sectors were clarified.
- iv. Responses were received from various concerned Ministries, SPCBs, Industrial Associations including individuals.
- v. Based on the above, final meeting was convened by the Secretary , MoEFCC with CPCB and senior officers of MoEFCC on January 06, 2016 to resolve the issues appropriately and finalize the ‘Re-categorization’. Accordingly , following modifications in the ‘Range of Pollution Index ‘for the purpose of categorization of industrial sectors were suggested :
 - Industrial Sectors having Pollution Index score of 60 and above – Red category
 - Industrial Sectors having Pollution Index score of 41 to 59 –Orange category
 - Industrial Sectors having Pollution Index score of 21 to 40 –Green category
 - Industrial Sectors having Pollution Index score incl.& upto 20 –White category
- vi. Based on the final criteria as described in v above , the final categorization is as follows :

Category of Industrial Sector	Existing Categorization	Proposed (New) categorization
Red	85	60
Orange	73	83
Green	86	63
White	---	36
Total	244	242

- vii. In the proposed categorization, some of the industrial sectors have been either deleted due to duplication or merged with similar type of sectors on account of same

characteristics of pollution generation. In a similar way, some of the industrial sectors are split into more sectors on account of variation in the raw materials / manufacturing process. As a result final totals of the existing and proposed categorization are different.

- viii. The industrial sector which doesn't fall under any of the above four categories (Red, Orange, Green and White) , decision with regard to its categorization will be taken at the level of concerned SPCB/PCC by a committee headed by the Member Secretary , SPCB/PCC and comprising of two senior cadre Engineers / Scientists of the SPCB / PCC in accordance with the scoring-criteria specified in this document.
- ix. The summary is presented in the following Table G-1 and final lists of Red, Orange, Green and White categories of industries are presented in Tables G-2, G-3, G-4 and G-5 respectively, which are self explanatory.

Table G-1: Final Summary Table Red , Orange, Green and White Categories of Industries (16-01-16)

Sl No.	Original Categorization	Initial Nos.	Addition by Splitting into further classes	Deletion/ Shifting to foot-note due to vague term / Merger / other reasons	Re-categorization to Red	Re-categorization to Orange	Re-categorization to Green	Re-categorization to White	Check
									1
1	Red	85	11	7	60	26	3	Nil	96=96
2	Orange	73	2	3	Nil	51	19	2	75=75
3	Green	86	Nil	3+2=5	Nil	6	41	34	86=86
Final Categorization		244	13	15	60 (Red)	83 (Orange)	63 (Green)	36 (White)	257 =257 (Total categories including in foot-note)

Table G-2 : Final List of Red Category of Industrial Sectors

Sl No.	Orgnl Sl.No	Industry Sector	W1	W2	W	A1	A2	A	H	W+A+H	Revised Category	REMARKS
1.	38	Isolated storage of hazardous chemicals (as per schedule of manufacturing, storage of hazardous chemicals rules ,1989 as amended)									R-R	As per provisions of Rules, to be kept under Red category especially for safety purposes.
2.	4	Automobile Manufacturing (integrated facilities)	30	-	30	20	-	20	10	60	R-R	i. Such types of plants are having either one or combinations of polluting activities viz. washing, metal surface finishing operations, pickling, plating, electro-plating , phosphating, painting , heat treatment etc. ii. Some of such plants may outsource some /all of the polluting activities. In such cases, after thorough inspection of such units by concerned SPCB, re-categorization of the industry shall be made accordingly.
3.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Spent cleared metal catalyst containing copper,, Spent cleared metal catalyst containing zinc,,	30	-	30	20	-	20	10	60	R-R	All the three types of pollutants are expected.
4.	44	Manufacturing of lubricating oils ,grease and petroleum based products	20	-	20	20	-	20	20	60	R-R	Generates all sorts of pollution.
5.	66 E	DG Set of capacity > 5 MVA	-	-	-	20	5	25	-	62.5	R-R	i. Mainly air polluting. ii. DG sets consume the diesel @ 0.21 litres/hr/KVA at full load. iii. Average running is taken @ 12 hrs / day although many of the DG sets run for more than this period.
6.	31	Industrial carbon including electrodes and graphite blocks, activated carbon, carbon black	10	-	-	20	5	25	10	62.5	R-R	Mainly air polluting. Air pollution score is normalized to 100.

7.	39	Lead acid battery manufacturing(excluding assembling and charging of lead-acid battery in micro scale)	10	-	10	25	-	25	10	62.5	R-R	<ul style="list-style-type: none"> i. Mainly air polluting. Air pollution scores are normalized to 100. ii. Lead Acid Battery manufacturing consists of various stages which broadly involve (after producing or receiving lead oxide): Paste Mixing , Grid Casting , Grid Pasting & Curing , Hydro-setting, parting & enveloping , Stacking, grouping & inter-cell welding , Formation. iii. Exposure of workmen to lead during all or any of the processes outlined above exceeds the prescribed standards if appropriate equipment in this respect is not installed at any Battery Manufacturing Unit. iv. All of the above processes, some more than others, involve release of lead particles or fumes into the environment. Pollution from the above processes can be grouped into two possible types, viz: (a) Lead Oxide becomes airborne and there is Particulate Pollution (b) Fumes are generated and there is Gaseous Pollution
8.	62	Phosphate rock processing plant	30	-	30	20	-	20	-	62.5	R-R	<ul style="list-style-type: none"> i. The separation of phosphate rock from impurities and non-phosphate materials for use in fertilizer manufacture consists of beneficiation, drying or calcining at some operations, and grinding. Phosphate rock from the mines is first sent to beneficiation units to separate sand and clay and to remove impurities. Steps used in beneficiation depend on the type of rock. ii. The water & air pollution scores are normalized to 100.

9.	66	Power generation plant [except Wind and Solar renewable power plants of all capacities and Mini Hydel power plant of capacity <25MW]	10	-	10	15	10	25		62.5	R-R	1. Mainly air polluting. It uses a mixture of biomass (agro based) and coal (< 10 %) as a fuel. Almost, round the year operation. 2 . In case of DG sets of 5 MVA & more and emissions of SO2 will take place due to use of liquid fuel. Air pollution score will be =20 + 10 = 30, Normalized score will be 75. 3. In case of 'Waste to Energy Plants' , water will be used for cooling and air score will be - 30+10 = 40.
10.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Spent catalyst containing nickel, cadmium, Zinc, copper, arsenic, vanadium and cobalt,	30	-	30	25	-	25	10	65	R-R	All the three types of pollutants are expected.
11.	67	Processes involving chlorinated hydrocarbons	30	-	30	20	-	20	15	65	R-R	Chlorinated hydrocarbons are used in the manufacture of insecticides, pesticides and organo chloro pesticides. Effluents & emissions are toxic in nature.
12.	74	Sugar (excluding Khandsari)	20	10	30	15	10	25	10	65	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Sugar mills generate all sorts of pollution problems.
13.	22	Fibre glass production and processing (excluding moulding)	-	-	-	20	-	20	20	67	R-R	i. The use of styrene in most methods of fiberglass production causes hazardous air pollution that is harmful to breathe at excessive levels. ii. It is mainly air polluting & HW generating industry. The air pollution & HW scores are normalized to 100. iii. In case of lead containing glass, the score of A1 will be 25 and final normalized score will be 75 and shall be categorized as Red.
14.	23	Fire crackers manufacturing and bulk storage facilities	-	-	-	20	-	20	20	67	R-R	i. This is the normalized score based on air pollution & HW generation. ii. Various hazardous chemicals are used in the manufacturing process. iii. These chemicals are namely Potassium Nitrate , Potassium per-chlorate, Barium Nitrate, Aluminium compounds, Copper Chloride etc.

												iv. These chemicals are highly hazardous and cause serious diseases among the workers. especially ability of blood to carry oxygen leading to headaches, methemoglobinemia and kidney problems , skin problems, thyroid metal fume etc.
15.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Dismantlers Recycling Plants -- Components of waste electrical and electronic assembles comprising accumulators and other batteries included on list A, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Schedule 2 constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of this Schedule.	-	-	-	30	0	30	10	67	R-R	Mainly air polluting and hazardous waste generating. Air & HW pollution scores are jointly normalized to 100.
16.	47	Milk processes and dairy products(integrated project)	20	10	30	20	5	25	-	68.75	R-R	i. Water as well as air polluting due to use of boilers. ii. Water & air pollution scores are normalized to 100.
17.	63	Phosphorous and its compounds	30	-	30	25	-	25	-	68.75	R-R	Water pollution & air pollution containing compounds of phosphorous are expected
18.	61	Pulp & Paper (waste paper based without bleaching process to manufacture Kraft paper)	20	10	30	15	10	25	0	68.75	R-R	Mainly water & air polluting . Water & air pollution scores are normalized to 100.
19.	13	Coke making , liquefaction, coal tar distillation or fuel gas making	30	-	30	20	-	20	20	70	R-R	It is a kind of petrochemical industry.

20.	41	Manufacturing of explosives, detonators, fuses including management and handling activities	30	-	30	20	-	20	20	70	R-R	<ul style="list-style-type: none"> i. Explosives manufacture and use contribute some measure of hazardous waste to the environment. ii. Nitroglycerin produces several toxic byproducts such as acids, caustics, and oils contaminated with heavy metals. These must be disposed of properly by neutralization or stabilization and transported to a hazardous waste landfill. iii. The use of explosives creates large amounts of dust and particulate from the explosion, and, in some cases, releases asbestos, lead, and other hazardous materials into the atmosphere.
21.	45	Manufacturing of paints varnishes, pigments and intermediate (excluding blending/mixing)	30	-	30	25	-	25	15	70	R-R	<ul style="list-style-type: none"> i. The process may cause considerable emissions of volatile organic compounds (VOC). VOC contribute to the creation of ozone in the lower layers of the atmosphere (photochemical air pollution) and can present danger to health. ii. Dust and odour may also be a problem. iii. Washing of vessels will contribute waste-waters. iv. Large quantity of HWs are also produced.
22.	56	Organic Chemicals manufacturing	30	-	30	20	-	50	20	70	R-R	Such types of industrial sectors generate all sorts of pollution.
23.	1	Airports and Commercial Air Strips	20	10	30	-	-	-	10	75	R-R	<ul style="list-style-type: none"> i. The Airports are generating mainly the waste-waters. ii. This is the water pollution normalized score for airports having discharge more than 100 KLD. iii. The airports / strips having discharge less than 100 KLD will have score of 50 and hence orange category. iv. If the score is normalized wrt water + HW both, then all the airports will come under Orange category (score - 58.33).
24.	3	Asbestos and asbestos based industries	-	-	-	30	-	30	10	75	R-R	<ul style="list-style-type: none"> i. This is mainly air polluting industry. ii. Final score is based on air pollution score only. iii. Asbestos is carcinogenic and banned in many countries.
25.	5	Basic chemicals and electro chemicals and its derivatives including manufacturing of acid	30	-	30	-	-	-	10	75	R-R	<ul style="list-style-type: none"> i. Standards prescribed for Inorganic Chemicals are adopted. ii. It is mainly water polluting industry having effluents which are toxic and not easily biodegradable.

												<ul style="list-style-type: none"> iii. Water pollution score normalized to 100 is undertaken. iv. The earlier Red category industrial sector namely "Hydrocyanic acid and its derivatives " is also merged under this industrial sector.
26.	7	Cement	-	-	-	20	10	30	-	75	R-R	This is mainly air polluting industry & hence normalized air pollution score.
27.	9	Chlorates, per-chlorates & peroxides	30	-	30	-	-	-	-	75	R-R	<ul style="list-style-type: none"> i. It is mainly water polluting industry having effluents which are toxic and not easily biodegradable. ii. Water pollution score normalized to 100 is undertaken.
28.	10	Chlorine, fluorine, bromine, iodine and their compounds	30	-	30	-	-	-	-	75	R-R	<ul style="list-style-type: none"> i. It is mainly water polluting industry having effluents which are toxic and not easily biodegradable. ii. Water pollution score normalized to 100 is undertaken.
29.	16	Dyes and Dye- Intermediates	30	-	30	20	5	25	20	75	R-R	<ul style="list-style-type: none"> i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
30.	26	Health-care Establishment (as defined in BMW Rules)	20	10	30	-	-	-	-	75	R-R	<ul style="list-style-type: none"> i. Mainly water polluting. ii. The water pollution score is normalized to 100 & valid for Hospitals having total waste-water generation > 100 KLD. iii. The hospitals with incinerator will be categorized as Red irrespective of the quantity of the waste-water generation. iv. The hospitals having total waste-water generation less than 100 KLD and without incinerator, the normalized water pollution score will be 50 and will be categorized as Orange category.
31.	29	Hotels having overall waste-water generation @ 100 KLD and more.	20	10	30	15	-	15	-	75	R-R	<ul style="list-style-type: none"> i. Mainly water polluting. Small boiler may be installed. ii. The water pollution score is normalized to 100 & valid for Hotels having waste-water generation > 100 KLD. iii. The hotels having more than 20 rooms and waste-water generation less than 100 KLD and having a coal / oil fired boiler , the pollution score will be 35/40 & are categorized as Orange. iv. The hotels having more than 20 rooms and waste-water generation less than 10 KLD and

												having no-boiler & no hazardous waste generation, the pollution score will be 20 & are categorized as Green.
32.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Lead acid battery plates and other lead scrap/ashes/residues not covered under Batteries (Management and Handling) Rules, 2001. [* Battery scrap, namely: Lead battery plates covered by ISRI, Code word "Rails" Battery lugs covered by ISRI, Code word "Rakes". Scrap drained/dry while intact, lead batteries covered by ISRI, Code word "rains".	30	-	30	25	--	25	20	75	R-R	All the three types of pollutants are generated.
33.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Integrated Recycling Plants -- Components of waste electrical and electronic assembles comprising accumulators and other batteries included on list A, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Schedule 2 constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of this Schedule.	30	-	30	25	-	25	20	75	R-R	All the three types of pollutants are expected.
34.	43	Manufacturing of glue and gelatin	30	10	40	20	-	20	-	75	R-R	Highly water polluting & obnoxious air polluting.
35.	49	Mining and ore beneficiation	30	10	40	15	5	20	-	75	R-R	Both air and water polluting. Score is normalized with air & water pollution.

36.	52	Nuclear power plant	10	-	10	30	-	30	15	75	R-R	<ul style="list-style-type: none"> i. Mainly air polluting due to incinerator. Others - cooling water. ii. Air pollution score is normalized to 100.
37.	58	Pesticides (technical) (excluding formulation)	30	-	30	25	-	25	20	75	R-R	<ul style="list-style-type: none"> i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
38.	64	Photographic film and its chemicals	30	-	30	-	-	-	-	75	R-R	<ul style="list-style-type: none"> i. Silver salts and other chemicals are used in preparation. Slight quantity of effluents is generated. ii. Water pollution scores are normalized to 100.
39.	68	Railway locomotive work shop/Integrated road transport workshop/Authorized service centers	20	10	30	-	-	-	10	75	R-R	<ul style="list-style-type: none"> i. Mainly water polluting industry . Water is used in the washing of locomotives, road transport vehicles during servicing. ii. This score is valid for those Centers having discharge more than 100 KLD. iii. Service Centers having waste-water generation < 100 KLD, the normalized score will be = (100*20)/40= 50.
40.	84	Yarn / Textile processing involving any effluent/emission generating processes including bleaching, dyeing, printing and colouring	30	10	40	15	-	15	20	75	R-R	In this sector all sorts of pollution are generated.
41.	8	Chlor Alkali	30	10	40	20	10	30	10	80	R-R	<ul style="list-style-type: none"> i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Chlor-alkali units are having different section like NaOH, Cl₂, SBP etc which are having toxic effluents. Additionally , fuel consumption is also on higher-side.
42.	70	Ship Breaking Industries	30	-	30	30	-	30	20	80	R-R	<ul style="list-style-type: none"> i. The ship-breaking industry creates numerous hazards for the coastal and marine environment. ii. Ship-breaking releases a large number of dangerous pollutants, including toxic waste, oil, poly-chlorinated biphenyls, and heavy metals, into the waters and sea bed. iii. While most of the oil is removed before a ship is scrapped, sand used to mop up the remaining oil is thrown into the sea. High concentrations of oil and grease are then found in the coastal waters, choking marine life.

												iv. Solid waste strewn on the shore, 45 tonnes on any given day according to a study by the Central Pollution Control Board, also finds its way into the sea. v. Adding to the stress on coastal waters, the organic load from the thousands of workers living in cramped conditions with little or no sanitary facilities results in unacceptably high levels of BOD.
43.	53	Oil and gas extraction including CBM (offshore & on-shore extraction through drilling wells)	30	-	30	-	-	-	20	83	R-R	i. Mainly water polluting & hazardous waste generating. ii. The water pollution & HW generation scores are normalized to 100.
44.	36	Industry or process involving metal surface treatment or process such as pickling/ electroplating/paint stripping/ heat treatment using cyanide bath/ phosphating or finishing and anodizing / enamellings/ galvanizing	30	-	30	-	-	-	20	83	R-R	Mainly water polluting & toxic hazardous waste generating industry. Scores are normalized to 100.
45.	80	Tanneries	30	-	30	-	-	-	20	83	R-R	Mainly water polluting & hazardous waste generating industry. Scores are normalized to 100.
46.	65	Ports and harbour, jetties and dredging operations	30	10	40	15	10	25	20	85	R-R	This category contain all sorts of pollution.
47.	77	Synthetic fibers including rayon ,tyre cord, polyester filament yarn	30	10	40	25	10	35	10	85	R-R	This sector generates all sorts of pollution problems.
48.	81	Thermal Power Plants	30	10	40	20	10	30	15	85	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. TPP generate all sorts of pollution problems.
49.	71	Slaughter house (as per notification S.O.270(E)dated 26.03.2001)and meat processing industries, bone mill, processing of animal horn, hoofs and other body parts	25	10	35	-	-	-	-	87.5	R-R	Mainly water polluting and obnoxious odour generating industry. The water pollution score is normalized to 100
50.	2	Aluminium Smelter	30	10	40	20	10	30	20	90	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. This sector is generating all sorts of pollution i.e. air, water and HW.
51.	12	Copper Smelter	30	10	40	20	10	30	20	90	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Integrated Copper Smelters contain all sorts of

												pollution.
52.	20	Fertilizer (basic) (excluding formulation)	30	10	40	20	10	30	20	90	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Generates all sorts of pollution.
53.	37	Iron & Steel (involving processing from ore/ integrated steel plants) and or Sponge Iron units	30	10	40	20	10	30	20	90	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
54.	61	Pulp & Paper (waste paper based units with bleaching process to manufacture writing & printing paper)	25	10	35	25	10	35	20	90	R-R	Waste paper based Pulp & Paper mills with bleaching process generate all sorts of pollution.
55.	85	Zinc Smelter	30	10	40	20	10	30	20	90	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Integrated Zinc smelter generates all sorts of pollution problems.
56.	55	Oil Refinery (mineral Oil or Petro Refineries)	30	10	40	25	10	35	20	95	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
57.	59	Petrochemicals Manufacturing (including processing of Emulsions of oil and water)	30	10	40	25	10	35	20	95	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution. iii. The earlier red category industrial sector namely "Processing of Emulsions of Oil & Water " is merged with this industrial sector.
58.	60	Pharmaceuticals	30	10	40	30	5	35	20	95	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
59.	61	Pulp & Paper (Large-Agro + wood) , Small Pulp & Paper (agro based-wheat straw/rice husk)	30	10	40	25	10	35	20	95	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Large /Small Agro based Pulp & Paper mills contribute all sorts of pollution problems.
60.	15	Distillery (molasses / grain / yeast based)	30	10	40	-	-	-	-	100	R-R	Mainly water polluting industry. Final score is the normalized water pollution score.

Note :

- i. Under the column Revised Category, the full forms of the abbreviations are as follows :
- R-R means original category was Red and revised category is also Red
 - R-O means original category was Red and revised category is Orange
 - O-O means original category was Orange and revised category is also Orange
 - O-G means original category was Orange and revised category is Green
 - O-W means original category was Orange and revised category is White
 - G-O means original category was Green and revised category is Orange
 - G-G means original category was Green and revised category is also Green
 - G-W means original category was Green and revised category is White
- ii. There are specific remarks in respect of some of the industrial sectors. These sectors are either merged with other relevant sectors or deleted due to duplication. The overall details are as follows :

Sl No.	Original Sl No.	Industry Sector	Original Category	Remarks
1	14	Common treatment and disposal facilities (CETP, TSDF, E-waste recycling, CBMWTF, effluent conveyance project, incinerator, solvent/acid recovery plant, MSW sanitary land fill site)	R	<p>i. All such facilities are classified as Red but special category projects as these are parts of pollution control facilities.</p> <p>ii. In case of CETP, the categorization will depend upon the category of member industries being served.</p>
2	18	Processing of Emulsions of Oil & Water		It is a part of Petrochemical industries. Transferred and merged with the industrial sector namely 'Petrochemicals' at Sl. No. 54.
3	27	Heavy engineering including ship building (with investment on Plant & Machineries more than Rs 10 crores)	R	Most of the pollution generating processes / operations under this category are similar to the industry category namely "Automobile Manufacturing (integrated facilities)" at Sl. No. 1 and may be referred accordingly.
4	30	Hydrocyanic acid and its derivatives	R	Have been merged with the red category industrial sector namely "Basic chemicals and electro chemicals and its derivatives including manufacturing of acid" at Sl. No. 24
5	32	Industrial estates/ parks / complexes/ areas/ export processing zones/ SEZs/ Biotech parks/ leather complex	R	The classification will depend upon the category(ies) of the industries operating / proposed to be permitted in the area. In this context, guidelines prescribed in EIA Notification, 2006 shall be followed.
6	33	Industrial inorganic gases namely- a) Chemical gas- Acetylene, hydrogen, chlorine, fluorine, ammonia, sulphur dioxide, ethylene, hydrogen-sulphide, phosphine b) Hydrocarbon gases- Methane, ethane, propane	R	These gases are generally secondary products and produced alongwith other main products. To be classified as per the main parent plant.
7	69	Reprocessing of used oils & waste oils	R	<p>i. The industry generates mainly the air pollution and oil bearing hazardous wastes. The normalized (air pollution & HW generation score is 58.33.</p> <p>ii. To be deleted as already covered under HW Recyclers / Re-processors (Used oils / Waste Oils) under Orange Category</p>

Table G-3 : Final List of Orange Category of Industrial Sectors

Final Sl. No.	Orgnl S.No	Industry Sector	W1	W2	W	A1	A2	A	H	W+A+H	Revised category	Remarks
1.	20	Dismantling of rolling stocks (wagons/ coaches)	--	--	--	15	--	15	10	41.67	O-O	Emissions of dust and generation of waste oils take place during dismantling. Air pollution & HW generation scores (15+10=25) are normalized to 100.
2.	5	Bakery and confectionery units with production capacity > 1 TPD. (With ovens / furnaces)	20	--	20	15	--	15	--	43.75	O-O	
3.	10	Chanachur and laddoo from puffed and beaten rice(muri and shira) using husk fired oven	20	--	20	15	--	15	--	43.75	O-O	Normal water and air polluting.
4.	23	Coated electrode manufacturing	15	0	15	20	0	20	0	43.75	G-O	Preparation of core wire / rod, preparation of dry mix, preparation of wet mix, application of coating by extrusion, baking of coated electrodes
5.	24	Compact disc computer floppy and cassette manufacturing / Reel manufacturing	15	0	15	20	0	20	0	43.75	G-O	Generates waste-water and process emissions.
6.	24	Flakes from rejected PET bottle	20	-	20	15	-	15	-	43.75	R-O	Normal water & air pollutions are generated.
7.	30	Food and food processing including fruits and vegetable processing	20	--	20	15	--	15	--	43.75	O-O	Normal water and air polluting.
8.	40	Jute processing without dyeing	20	--	20	15	--	15	--	43.75	O-O	CPCB has notified standards for this category. Both air and water pollutions are generated.
9.	56	Manufacturing of silica gel	15	0	15	20	0	20	0	43.75	G-O	Waste-waters containing TDS and emissions of H ₂ SO ₄ are generated.

10.	45	Manufacturing of tooth powder, toothpaste, talcum powder and other cosmetic items	20	--	20	15	--	15	--	43.75	O-O	Both air and water pollution are generated.
11.	55	Printing or etching of glass sheet using hydrofluoric acid	15	--	15	20	--	20	--	43.75	O-O	Both air and water pollution are generated.
12.	65	Silk screen printing, sari printing by wooden blocks	20	--	20	15	--	15	--	43.75	O-O	Wash-water and PM emissions from boilers .
13.	76	Synthetic detergents and soaps(excluding formulation)	20	-	20	15	-	15	-	43.75	R-O	i. This is the score for units having generation of waste-waters less than 100 KLD. ii. The units having waste-water generation more than 100 KLD will become mainly water polluting and accordingly normalized water pollution score will be 75 and be categorized as Red.
14.	71	Thermometer manufacturing	15	--	15	20	--	20	--	43.75	O-O	Process - making glass bulb, forming reservoir in the glass tube for fluid, inserting fluid, scale marking. Use of fuel to heat the glass tubes and hydrofluoric acid to seal the scaling. Small quantities of spent acids are generated.
15.	14	Cotton spinning and weaving (medium and large scale)	--	--	--	15	--	37.5	10	47.5	O-O	Mainly air polluting industry. Sources of air pollution (PM) are the fine particles of cotton from spinning process. Air pollution score is normalized to 100.
16.	1	Almirah, Grill Manufacturing (Dry Mechanical Process)	--	--	--	20	--	20	--	50	O-O	Air pollution due to spray painting (emissions of VOCs). Units without painting operations shall be categorized as White.

17.	2	Aluminium & copper extraction from scrap using oil fired furnace (dry process only)	--	--	--	20	--	20	10	50	O-O	i. Normalized Air pollution score. ii. Significant air pollution due to melting (emissions of SO ₂ , PM).
18.	3	Automobile servicing, repairing and painting (excluding only fuel dispensing)	20	--	20	20	--	20	10	50	O-O	Normal water & air polluting and recyclable waste oil generating. If the waste water generation is more than 100 KLD, it will become mainly water polluting and Red category unit.
19.	4	Ayurvedic and homeopathic medicine	20	--	20	15	--	15	15	50	O-O	
20.	7	Brickfields (excluding fly ash brick manufacturing using lime process)	--	--	--	20	--	20	--	50	O-O	Significantly air polluting.
21.	8	Building and construction project more than 20,000 sq. m built up area	20	--	20	20	--	20	--	50	O-O	1. In the pre-construction stage , it is mainly air polluting due to generation of dust (PM) emissions. 2. After construction, it is mainly water polluting. If the discharge is more than 100 KLD, it will be having the normalized score of 75 and be categorized as Red.
22.	6	Ceramics and Refractories	-	-	-	20	-	20	-	50	R-O	i. Mainly air polluting industry. ii. This score is for the units having coal consumption < than 12 MT/day. iii. For the units having coal consumption > 12 MT /day, the normalized air pollution score will be 62.5 and shall be categorized as Red.

23.	11	Coal washeries	15	10	25	15	-	15	-	50	R-O	<p>i. Wet washeries are mainly water polluting industry generating effluents which are having inorganic SS & TDS. Additionally, air pollution due to PM emissions is also generated.</p> <p>ii. Water & air pollution scores are jointly normalized to 100.</p>
24.	16	Dairy and dairy products (small scale)	20	--	20	20	--	20	--	50	O-O	Water and air polluting both.
25.	18	DG set of capacity >1MVA but < 5MVA	--	--	--	20	--	20	--	50	O-O	Mainly air polluting . air pollution score is normalized to 100.
26.	17	Dry coal processing, mineral processing, industries involving ore sintering, pelletisating, grinding & pulverization	-	-	-	20	-	20	-	50	R-O	Mainly air polluting industry. Final score is the normalized air pollution score.
27.	19	Fermentation industry including manufacture of yeast, beer, distillation of alcohol (Extra Neutral Alcohol)	20	-	20	-	-	-	-	50	R-O	<p>i. Mainly water polluting industry. This is the normalized water pollution score for units having discharge < 100 KLD.</p> <p>ii. For the units having discharge > 100 KLD, the normalized water pollution score will be 75 and shall be accordingly categorized as Red.</p>
28.	21	Ferrous and Non- ferrous metal extraction involving different furnaces through melting, refining, re-processing, casting and alloy-making	-	-	-	15	5	20	10	50	R-O	<p>i. Mainly air polluting.</p> <p>ii. This score is applicable to secondary production of ferrous & non-ferrous metals (excluding lead) up-to 1 MT/hour production.</p>

												<p>iii. For lead, the normalized air pollution score will be = $(100 \times 25) / 40 = 62.5$ and is categorized as Red.</p> <p>iv. For Induction Furnace clubbed with AOD furnace - separate calculation shall be made based on the capacity of the furnaces. In such industries, the molten metal from induction furnace is transferred to AOD furnace where other metals like manganese and nickel are added to get the metal of desired constituents. The lime and silicon are also added for reduction of the metal oxides to the base metal. the normalized air pollution score will be = $(100 \times 25) / 40 = 62.5$ and is categorized as Red.</p>
29.	26	Fertilizer (granulation / formulation / blending only)	--	--	--	20	--	20	--	50	O-O	Air polluting.
30.	27	Fish feed, poultry feed and cattle feed	--	--	--	20	--	20	--	50	O-O	Obnoxious odour , H ₂ S etc. AP score is normalized to 100
31.	28	Fish processing and packing (excluding chilling of fishes)	20	--	20	--	--	--	--	50	O-O	Mainly water polluting. WP score is normalized to 100.

32.	31	Forging of ferrous and non- ferrous metals (using oil and gas fired furnaces)	--	--	--	20	--	20	--	50	O-O	Heating furnace. Mainly air polluting.
33.	32	Formulation/pelletization of camphor tablets, naphthalene balls from camphor/ naphthalene powders.	--	--	--	20	--	20	--	50	O-O	Mainly air polluting. Emissions of Benzene, HC are expected.
34.	33	Glass ceramics, earthen potteries and tile manufacturing using oil and gas fired kilns, coating on glasses using cerium fluorides and magnesium fluoride etc.	--	--	--	20	--	20	--	50	O-O	Mainly air polluting. Emissions of SO2 are expected.
35.	35	Gravure printing, digital printing on flex, vinyl	20	--	20	20	--	20	10	50	O-O	Waste waters , emissions of VOCs
36.	36	Heat treatment using oil fired furnace (without cyaniding)	--	--	--	20	--	20	--	50	O-O	Mainly air polluting and noise generating. AP Score is normalized to 100.
37.	28	Hot mix plants	-	-	-	20	-	20	-	50	R-O	Mainly air polluting. Air pollution scores are normalized to 100.
38.	37	Hotels (< 3 star) or hotels having > 20 rooms and less than 100 rooms.	20	--	20	20	--	20	--	50	O-O	Mainly water polluting. WP score is normalized to 100.
39.	38	Ice cream	20	--	20	20	--	20	--	50	O-O	Wash-water and boilers / oven for pasteurization.
40.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Paint and ink Sludge/residues	-	-	-	20	0	20	0	50	R-O	Mainly air polluting. Air pollution score is normalized to 100
41.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Brass Dross ,, Copper Dross,, Copper Oxide Mill Scale,, Copper Reverts, Cake & Residues,, Waste Copper and copper alloys in	10	-	10	20	-	20	10	50	R-O	Mainly air polluting.

		dispersible form,, Slags from copper processing for further processing or refining ,, Insulated Copper Wire,, Scrap/copper with PVC sheathing including ISRI-code material namely "Druid" ,, Jelly filled Copper cables ,, Zinc Dross-Hot dip Galvanizers SLAB,, Zinc Dross-Bottom Dross,, Zinc ash/Skimming arising from galvanizing and die casting operations,, Zinc ash/Skimming/other zinc bearing wastes arising from smelting and refining,, Zinc ash and residues including zinc alloy residues in dispersible from ,,										
42.	35	Industry or processes involving foundry operations	-	-	-	20	-	20	-	50	R-O	<ul style="list-style-type: none"> i. This score is valid for the foundries having capacity < 5 MT/hr as such units require the coal/coke @ < 500 kg/hr. ii. The units having capacity of 5 MT/hr and more, the coal/coke consumption will be more than 500 kg/hr and the normalized score will be 62.5 and classified accordingly as Red.
43.	40	Lime manufacturing (using lime kiln)	-	-	-	20	-	20	-	50	R-O	Mainly air polluting
44.	41	Liquid floor cleaner, black phenyl, liquid soap, glycerol mono-stearate manufacturing	20	--	20	20	--	20	--	50	O-O	Both air and water pollution are generated.

45.	42	Manufacturing of glass	10	-	-	20	-	20	-	50	R-O	<p>i. Mainly air polluting (melting at 1500°C and refining .</p> <p>ii. In case of lead glass , the score of A1 will be 25 and accordingly the normalized scores will be 62.5 i.e. Red .</p>
46.	43	Manufacturing of iodized salt from crude/ raw salt	12	--	12	20	--	20	--	50	O-O	Boiling in Evaporators (multiple effect evaporators), centrifuging, iodization with KIO3 mixing . Mainly air polluting. Air pollution score is normalized to 100.
47.	42	Manufacturing of mirror from sheet glass	--	--	--	20	--	20	--	50	O-O	Evaporator & furnace for heating the metal to be applied as reflector on mirror. Mainly air polluting.
48.	44	Manufacturing of mosquito repellent coil	--	--	--	20	--	20	--	50	O-O	Mainly air polluting. Toxic fumes are expected.
49.	46	Manufacturing of Starch/Sago	25	-	25	15	-	15	-	50	R-O	<p>i. Water and air polluting industry. Boiler is used for steam generation.</p> <p>ii. Water & air pollution scores are normalized to 100</p>
50.	46	Mechanized laundry using oil fired boiler	20	--	20	20	--	20	--	50	O-O	Both air and water pollution are generated.
51.	47	Modular wooden furniture from particle board, MDF< swan timber etc, Ceiling tiles/ partition board from saw dust, wood chips etc., and other agricultural waste using synthetic adhesive resin, wooden box making (With boiler)	--	--	--	20	--	20	--	50	O-O	1. Mainly air polluting. Boiler as well as VOCs from use of adhesives. 2. Without boiler, it will be a Green category industry.
52.	50	New highway construction project	-	-	-	20	-	20	-	50	R-O	Mainly air polluting project.

53.	51	Non-alcoholic beverages(soft drink) & bottling of alcohol/non alcoholic products	20	-	20	15	5	20	-	50	R-O	i. Both air and water polluting. Score is normalized with air & water pollution. This score is valid for industries having waste-water generation < 100 KLD. ii. For the units having waste-water generation > 100 KLD the , normalized score would be 62.5 and categorized as Red.
54.	49	Paint blending and mixing (Ball mill)	20	--	20	20	--	20	10	50	O-O	Both air and water pollution are generated.
55.	62	Paints and varnishes (mixing and blending)	20	0	0	20	0	20	0	50	G-O	Waste-waters as well as fumes of VOCs due to solvents, pigments, varnishes.
56.	51	Ply-board manufacturing(including Veneer and laminate) with oil fired boiler/ thermic fluid heater(without resin plant)	0	--	0	20	--	20	--	50	O-O	Mainly air polluting because of use of boiler. AP score is normalized to 100
57.	52	Potable alcohol (IMFL) by blending, bottling of alcohol products	20	--	20	--	--	--	--	50	O-O	Mainly water polluting. WP score is normalized to 100.
58.	54	Printing ink manufacturing	20	--	20	20	--	20	--	50	O-O	1. Pigments, binders and solvents are used. 2. Boiler is also used. 3. Emissions of VOCs take place.
59.	70	Printing press	20	0	20	20	0	20	0	50	G-O	Colored waste-waters containing dyes and VOC emissions are generated.
60.	59	Reprocessing of waste plastic including PVC	20	--	20	20	--	20	--	50	O-O	Large quantities of wash-water and fugitive emissions are generated.
61.	61	Rolling mill (oil or coal fired) and cold rolling mill	10	--	10	20	--	20	--	50	O-O	Mainly air polluting. Air pollution score is normalized to 100. Others - cooling water and recyclable waste oils etc. are generated.
62.	67	Spray painting, paint baking, paint shipping	--	--	--	20	--	20	10	50	O-O	Mainly air polluting. Emissions of VOCs and HC are generated.

63.	72	Steel and steel products using various furnaces like blast furnace /open hearth furnace/induction furnace/arc furnace/submerged arc furnace /basic oxygen furnace /hot rolling reheated furnace	10	-	10	20	-	20	10	50	R-O	i. Mainly air polluting. In the emissions, oxides of manganese, nickel etc. are also present. ii. Air pollution score is normalized to 100.
64.	73	Stone crushers	-	-	-	20	-	20	-	50	R-O	Mainly air polluting. Air pollution score is normalized to 100.
65.	75	Surgical and medical products including prophylactics and latex	20	-	20	20	-	20	-	50	R-O	Both air as well as water polluting. Air and water pollution scores are normalized to 100.
66.	85	Teflon based products	0	0	0	20	0	20	0	50	G-O	Due to spraying applications, emissions (HC) are generated
67.	70	Thermocol manufacturing (with boiler)	--	--	--	20	--	20	--	50	O-O	Polystyrene is heated. Mainly air polluting with boiler.
68.	82	Tobacco products including cigarettes and tobacco/opium processes	20	-	20	20	-	20	-	50	R-O	Such industries generate both air as well as water pollution. These scores are normalized to 100.
69.	72	Transformer repairing/ manufacturing (dry process only)	--	--	--	20	--	20	10	50	O-O	Mainly air polluting because of ovens, shot-blasting etc.
70.	73	Tyres and tubes vulcanization/ hot retreating	10	--	10	20	--	20	--	50	O-O	Mainly air polluting . Emissions of PM, VOCs and obnoxious odour are generated.
71.	83	Vegetable oil manufacturing including solvent extraction and refinery /hydrogenated oils	20	-	20	15	5	20	10	50	R-O	i. All sorts of pollution are generated. ii. This score is valid for plants having waste-water generation < 100 KLD. iii. If the waste-water generation is more than 100 KLD, the unit shall be classified as Red.
72.	74	Wire drawing and wire netting	20	--	20	--	--	--	--	50	O-O	Mainly water polluting. WP score is normalized to 100.

73.	21	Dry cell battery (excluding manufacturing of electrodes) and assembling & charging of acid lead battery on micro scale	30	--	30	15	--	15	10	55	O-O	Water and air polluting both.
74.	50	Pharmaceutical formulation and for R & D purpose (For sustained release/ extended release of drugs only and not for commercial purpose)	20	--	20	20	--	20	15	55	O-O	i. All sorts of pollution are generated. ii. R&D activities are to be shifted to Red category.
75.	78	Synthetic resins	20	-	20	20	-	20	15	55	R-O	All sorts of pollution are generated.
76.	79	Synthetic rubber excluding molding	20	-	20	20	-	20	15	55	R-O	i. Most synthetic rubber is created from two materials, styrene and butadiene. Both are currently obtained from petroleum. ii. Process is similar to a part of Petrochemical plants.
77.	9	Cashew nut processing	25	--	25	20	--	20	--	56	O-O	Normal water and air polluting.
78.	12	Coffee seed processing	25	--	25	20	--	20	--	56	O-O	Normal water & air polluting industry.
79.	57	Parboiled Rice Mills	25	-	25	20	-	20	-	56	R-O	i. Rice Mills are generating both air and water pollution. Waste-waters are having high strength in respect of BOD. ii. This is the normalized air & water pollution score for units having waste-water generation < 100 KLD and fuel consumption less than 12 MTD. iii. For units having waste-water generation > 100 KLD or fuel consumption > 12 MTD or both , the unit shall be classified as Red.

80.	29	Foam manufacturing	--	--	--	20	--	20	15	58	O-O	<p>i. Raw material is polyurethane, latex etc.</p> <p>ii. Emissions of VOCs and HAPs. CH₃Cl₂ and similar compounds as blowing agents.</p> <p>iii. Outdated raw materials and spoiled slots are discarded as HW.</p>
81.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Used Oil – As per specifications prescribed from time to time.	10	0	10	20	0	20	15	58.33	R-O	Mainly air polluting and hazardous waste generating industry. Air pollution & HW scores are normalized to 100
82.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Waste Oil ---As per specifications prescribed from time to time.	-	-	-	20	0	20	15	58.33	R-O	Mainly air polluting and hazardous waste generating industry. Air pollution & HW scores are normalized to 100.
83.	56	Producer gas plant using conventional up drift coal gasification (linked to rolling mills glass and ceramic industry refectories for dedicated fuel supply)	--	--	--	20	--	20	15	58.33	O-O	Mainly air polluting & tar (HW) generating. SO ₂ , CO, NO _x are generated. Tar is the by-product and utilized by other industries in co-processing.

Note :

- i. Under the column Revised Category, the full forms of the abbreviations are as follows :
- R-R means original category was Red and revised category is also Red
 - R-O means original category was Red and revised category is Orange
 - O-O means original category was Orange and revised category is also Orange
 - O-G means original category was Orange and revised category is Green
 - O-W means original category was Orange and revised category is White
 - G-O means original category was Green and revised category is Orange
 - G-G means original category was Green and revised category is also Green
 - G-W means original category was Green and revised category is White

ii. There are specific remarks in respect of some of the industrial sectors. These sectors are either merged with other relevant sectors or deleted due to duplication / vague category. The overall details are as follows:

<i>Sl No .</i>	<i>Origin al Sl No.</i>	<i>Industry Sector</i>	<i>Original Categor y</i>	<i>Remarks</i>
1	24	<i>Excavation of sand from the river bed (excluding manual excavation)</i>	O	<i>Since such types of activities cause ecological disturbances, the instructions issued by the government from time to time be followed. To be categorized by MoEF&CC.</i>
2	39	<i>Infrastructure Development Project</i>	O	<i>Vast variety of such projects come under such category. This is to be decided by the concerned SPCB in line of EIA Notification , 2006.</i>
3	53	<i>Power press</i>	O	<i>Very vague term hence deleted. Such types of general engineering units have already been covered.</i>

Table G-4 : Final List of Green Category of Industrial Sectors

Sl. No.	Orgnl Sl. No.	Industry Sector	W1	W2	W	A1	A2	A	H	W+A+H	Revised Category	Remarks
1.	2	Aluminium utensils from aluminium circles by pressing only (dry mechanical operation)	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions from buffing operations.
2.	6	Ayurvedic and homeopathic medicines (without boiler)	10	--	10	--	--	--	--	25	G-G	Small quantities of waste-waters are generated from washing operations.
3.	8	Bakery /confectionery /sweets products (with production capacity <1tpd (with gas or electrical oven)	10	--	10	--	--	--	--	25	G-G	Small quantities of waste-waters are generated from washing operations.
4.	6	Bi-axially oriented PP film along with metalizing operations	10	--	10	--	--	--	--	25	O-G	Mainly extrusion process involving Cooling water recirculation
5.	10	Biomass briquettes (sun drying) without using toxic hazardous wastes	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions from pulverization / mixing operations.
6.	13	Blending of melamine resins & different powder, additives by physical mixing	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions from pulverization / mixing operations.
7.	15	Brass and bell metal utensils manufacturing from circles(dry mechanical operation without re-rolling facility)	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions from buffing operations.
8.	16	Candy	10	--	10	10	--	10	--	25	G-G	Small quantities of waste-water and minor

												PM emissions are generated.
9.	17	Cardboard or corrugated box and paper products (excluding paper or pulp manufacturing and without using boilers)	--	--	--	10	--	10	--	25	G-G	This score is valid with Small gas / electricity operated oven / furnace for making glue.
10.	18	Carpentry & wooden furniture manufacturing (excluding saw mill) with the help of electrical (motorized) machines such as electrical wood planner, steel saw cutting circular blade, etc.	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions from cutting operations.
11.	19	Cement products (without using asbestos / boiler / steam curing) like pipe ,pillar, jafri, well ring, block/tiles etc.(should be done in closed covered shed to control fugitive emissions)	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions from mixing operations.
12.	20	Ceramic colour manufacturing by mixing & blending only (not using boiler and wastewater recycling process)	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions.
13.	11	Chilling plant, cold storage and ice making	10	--	10	--	--	--	--	25	O-G	Cooling water recirculation only.
14.	13	Coke briquetting (sun drying)	--	--	--	10	--	10	--	25	O-G	Mainly air polluting industry. Sources of air pollution (PM) are pulverizes and mixers. Air pollution score is normalized to 100.
15.	28	Cotton spinning and weaving (small scale)	--	--	--	10	--	10	--	25	G-G	Minor PM emissions from spinning process.
16.	17	Dal Mills	--	--	--	10	--	10	--	25	O-G	Some fugitive emissions of PM.

17.	29	Decoration of ceramic cups and plates by electric furnace	--	--	--	10	--	10	--	25	G-G	Fumes of enamels. Minor air pollution.
18.	19	Digital printing on PVC clothes	--	--	--	10	--	10	--	25	O-G	Minor emissions / odour generations are expected.
19.	25	Facility of handling, storage and transportation of food grains in bulk	--	--	--	10	--	10	--	25	O-G	Some fugitive emissions of PM during handling of grains.
20.	36	Flour mills (dry process)	--	--	--	10	--	10	--	25	G-G	Fugitive dust emissions.
21.	41	Glass , ceramic, earthen potteries, tile and tile manufacturing using electrical kiln or not involving fossil fuel kiln	--	--	--	10	--	10	--	25	G-G	Minor fugitive emissions only.
22.	34	Glue from starch (physical mixing) with gas / electrically operated oven /boiler.	--	--	--	10	--	10	--	25	O-G	Some fugitive emissions of PM during mixing of raw materials.
23.	42	Gold and silver smithy (purification with acid smelting operation and sulphuric acid polishing operation) (using less or equal to 1 litre of sulphuric acid/ nitric acid per month)	--	--	--	10	--	10	--	25	G-G	Minor fumes from cleaning process.
24.	36	Heat treatment with any of the new technology like ultrasound probe , induction hardening , ionization beam, gas carburizing etc.	10	--	10	10	--	10	--	25	O-G	<ul style="list-style-type: none"> • Cooling waters and minor heat fumes. • Finalization of categorization subject to field verification.
25.	46	Insulation and other coated papers (excluding paper or pipe manufacturing)	--	--	--	10	--	10	--	25	G-G	Minor fumes due to application of poly-urethane
26.	49	Leather foot wear and leather products (excluding tanning and hide processing except cottage scale)	--	--	--	10	--	10	--	25	G-G	Minor fumes due to use of adhesives / gums.

27.	50	Lubricating oil, greases or petroleum based products (only blending at normal temperature)	--	--	--	10	--	10	--	25	G-G	Minor fumes at the time of transfers from one container to other.
28.	54	Manufacturing of pasted veneers using gas fired boiler or thermic fluid heater and by sun drying	--	--	--	10	--	10	--	25	G-G	1. Minor fumes due to application of gums / adhesives / pastes etc. 2. This score is valid only for gas fired boiler. 3. The units having coal fired boilers shall be categorized as Orange.
29.	59	Oil mill Ghani and extraction (no hydrogenation / refining)	10	--	10	--	--	--	--	25	G-G	Small quantities of floor washings & equipments washings are generated.
30.	48	Packing materials manufacturing from non asbestos fibre, vegetable fibre yarn	--	--	--	10	--	10	--	25	O-G	Some fugitive emissions of PM are expected.
31.	65	Phenyl/toilet cleaner formulation and bottling	--	--	--	10	--	10	--	25	G-G	Minor fumes of VOCs in the work zone
32.	67	Polythene and plastic processed products manufacturing (virgin plastic)	10	--	10	10	--	10	--	25	G-G	Cooling water & emissions due to mixing of raw materials.
33.	68	Poultry, Hatchery and Piggery	--	--	--	10	--	10	--	25	G-G	Obnoxious odour containing H ₂ S, CH ₄ etc. and fugitive PM emissions
34.	69	Power looms (without dye and bleaching)	--	--	--	10	--	10	--	25	G-G	Minor emissions of PM.
35.	71	Puffed rice (muri) (using gas or electrical heating system)	--	--	--	10	--	10	--	25	G-G	Minor emissions of PM.
36.	57	Pulverization of bamboo and scrap wood	--	--	--	10	--	10	--	25	O-G	Some fugitive emissions of PM are expected.
37.	72	Ready mix cement concrete	--	--	--	10	--	10	--	25	G-G	PM emissions.
38.	73	Reprocessing of waste cotton	--	--	--	10	--	10	--	25	G-G	PM emissions.
39.	60	Rice mill (Rice hullers only)	--	--	--	10	--	10	--	25	O-G	PM emissions are generated. Mainly air

													polluting. AP score is normalized to 100
40.	62	Rolling mill (gas fired) and cold rolling mill	10	--	10	10	--	10	--	25	O-G		Mainly air polluting. AP score is normalized to 100
41.	75	Rubber goods industry (with gas operated baby boiler)	--	--	--	10	--	10	--	25	G-G		Some PM emissions and obnoxious odour.
42.	63	Saw mills	--	--	--	10	--	10	--	25	O-G		Mainly air polluting. PM and noise are generated.
43.	77	Soap manufacturing (hand made without steam boiling / boiler)	10	--	10	--	--	--	--	25	G-G		Small quantities of waste-water are generated.
44.	80	Spice grinding (20 HP motor)	--	--	--	10	--	10	--	25	G-G		Small quantities of fugitive emissions of raw materials.
45.	66	Spice grinding (20 hp motor)	--	--	--	10	--	10	--	25	O-G		Mainly air polluting. Fugitive emissions of PM.
46.	81	Steel furniture without spray painting	--	--	--	10	--	10	--	25	G-G		Obnoxious gases from welding as well as noise pollution.
47.	82	Steeping and processing of grains	10	--	10	--	--	--	--	25	G-G		Washing waters are generated.
48.	86	Tyres and tube retreating (without boilers)	--	--	--	10	--	10	--	25	G-G		Due to applications of binding gum / adhesives / cement, some obnoxious fumes may generate.
49.	22	Chilling plant and ice making without using ammonia	12	--	12	--	--	--	--	30	G-G		Cooling water and brine water circuits. Spillages / blow down may take place
50.	26	CO2 recovery	12	--	12	--	--	--	--	30	G-G		Normal water pollution from scrubbing action
51.	32	Distilled water (without boiler) with electricity as source of heat	12	--	12	--	--	--	--	30	G-G		TDS as distillation residues

52.	45	Hotels (up to 20 rooms and without boilers)	12	--	12	--	--	--	--	30	G-G	This score is valid for hotels having overall waste-water generation less than 10 KLD.
53.	53	Manufacturing of optical lenses (using electrical furnace)	12	--	12	--	--	--	--	30	G-G	Small quantities of waste-waters containing TDS, SS are generated.
54.	58	Mineralized water	12	--	12	--	--	--	--	30	G-G	RO Rejects.
55.	68	Tamarind powder manufacturing	12	--	12	15	--	15	--	33.75	O-G	<ul style="list-style-type: none"> Dried tamarind fruits - cleaned and after soaking them in water they are boiled in steam jacketed kettle for about 40-45 minutes. Then pulp is extracted in pulper and dried in drum type drier and on cooling, the final product is packed. Generates small quantities of waste waters and air emissions. Joint score is normalized to 100.
56.	15	Cutting, sizing and polishing of marble stone	15	--	15	--	--	--	--	37.5	O-G	Mainly water polluting . Water pollution score is normalized to 100.
57.	22	Emery powder (fine dust of sand) manufacturing	--	--	--	15	--	15	--	37.5	O-G	Air polluting. PM emissions take place during various stages of grindings of naturally occurring minerals.
58.	25	Flyash export, transport & disposal facilities	-	-	-	15	-	15	-	37.5	R-G	<ul style="list-style-type: none"> This is mainly air polluting activity. This is the normalized score based on air pollution.
59.	48	Mineral stack yard / Railway sidings	15	-	15	15	-	15	-	37.5	R-G	<ul style="list-style-type: none"> Mainly air pollution due to loading, unloading, storage and transportation of the minerals.

													<ul style="list-style-type: none"> Waste-water generation mainly during rains only.
60.	54	Oil and gas transportation pipeline	-	-	-	10	5	15	-	37.5	R-G	<ul style="list-style-type: none"> Contains small gas based power plants up-to 5 MWs. Air pollution score is normalized to 100. In case , if these power plants are bigger / liquid fuel / oil based, scores will be calculated accordingly. 	
61.	64	Seasoning of wood in steam heated chamber	--	--	--	15	--	15	--	37.5	O-G	<p>Air pollution due to use boiler for supply of steam. Air pollution score is normalized to 100.</p>	
62.	84	Synthetic detergent formulation	--	--	--	15	--	15	--	37.5	G-G	<ul style="list-style-type: none"> This score is valid for the industries which are not manufacturing LABSA. It is procured from outside. Small quantities of emissions are generated from mini boiler. Air pollution score is normalized to 100. 	
63.	69	Tea processing (with boiler)	--	--	--	15	--	15	--	37.5	O-G	<p>With boiler, it is an orange category industry. Without boiler, it will be green category industry.</p>	

Note :

- i. Under the column Revised Category, the full forms of the abbreviations are as follows :
- R-R means original category was Red and revised category is also Red
 - R-O means original category was Red and revised category is Orange
 - O-O means original category was Orange and revised category is also Orange
 - O-G means original category was Orange and revised category is Green
 - O-W means original category was Orange and revised category is White
 - G-O means original category was Green and revised category is Orange
 - G-G means original category was Green and revised category is also Green
 - G-W means original category was Green and revised category is White
- ii. There are specific remarks in respect of some of the industrial sectors. These sectors are either merged with other relevant sectors or deleted due to duplication. The overall details are as follows :

Sl No .	Origin al Sl No.	Industry Sector	Original Categor y	Remarks
1	47	Jobbing and Machining	G	Vague category to be deleted, as such activities have already been covered in other categories.
2	66	Reel manufacturing	G	Already covered in other categories. Hence, deleted
3	1	Assembling of acid lead batteries (up to 10 batteries per day excluding lead plate casting)	G	Already covered in Orange category. Hence, deleted
4	5	Automobile fuel outlets (only dispensing)	G	Minor air pollution due to some fugitive emissions during fuel filling operations. May be exempted from the purview of Consent management.
5	30	Diesel generator sets (15 KVA to 1 MVA)	G	<ul style="list-style-type: none"> Normal operation – 12 hrs a day. Consumption of diesel = 1680 litres for 1 MVA DG set at full load @ 0.21 litres / KVA / hr. Stand-alone DG Sets having total capacity 1 MVA or less and equipped with acoustic enclosures alongwith adequate stack height may be exempted from the purview of Consent management. Higher capacity DG sets have already been covered under Red / Orange categories .

Table G-5: Final List of White Category of Industries

Sl. No.	Orgnl Sl. No.	Industry Sector	W1	W2	W	A1	A2	A	H	W+A+H	Revised Category
1.	3	Assembly of air coolers /conditioners ,repairing and servicing	--	--	--	--	--	--	--	--	G-W
2.	4	Assembly of bicycles ,baby carriages and other small non motorizing vehicles	--	--	--	--	--	--	--	--	G-W
3.	7	Bailing (hydraulic press)of waste papers	--	--	--	--	--	--	--	--	G-W
4.	9	Bio fertilizer and bio-pesticides without using inorganic chemicals	--	--	--	--	--	--	--	--	G-W
5.	11	Biscuits trays etc from rolled PVC sheet (using automatic vacuum forming machines)	--	--	--	--	--	--	--	--	G-W
6.	12	Blending and packing of tea	--	--	--	--	--	--	--	--	G-W
7.	14	Block making of printing without foundry (excluding wooden block making)	--	--	--	--	--	--	--	--	G-W
8.	21	Chalk making from plaster of Paris (only casting without boilers etc. (sun drying / electrical oven)	--	--	--	--	--	--	--	--	G-W
9.	25	Compressed oxygen gas from crude liquid oxygen (without use of any solvents and by maintaining pressure & temperature only for separation of other gases)	--	--	--	--	--	--	--	--	G-W
10.	27	Cotton and woolen hosiers making (Dry process only without any dyeing / washing operation)	--	--	--	--	--	--	--	--	G-W
11.	31	Diesel pump repairing and servicing (complete mechanical dry process)	--	--	--	--	--	--	--	--	G-W
12.	33	Electric lamp (bulb) and CFL manufacturing by assembling only	--	--	--	--	--	--	--	--	G-W

13.	34	Electrical and electronic item assembling (completely dry process)	--	--	--	--	--	--	--	--	G-W
14.	23	Engineering and fabrication units (dry process without any heat treatment / metal surface finishing operations / painting)	--	--	--	--	--	--	--	--	O-W
15.	35	Flavoured betel nuts production/ grinding (completely dry mechanical operations)	--	--	--	--	--	--	--	--	G-W
16.	37	Fly ash bricks/ block manufacturing	--	--	--	--	--	--	--	--	G-W
17.	38	Fountain pen manufacturing by assembling only	--	--	--	--	--	--	--	--	G-W
18.	39	Glass 51ydel51es and vilas making from glass tubes	--	--	--	--	--	--	--	--	G-W
19.	40	Glass putty and sealant (by mixing with machine only)	--	--	--	--	--	--	--	--	G-W
20.	43	Ground nut decortivating	--	--	--	--	--	--	--	--	G-W
21.	44	Handloom/ carpet weaving (without dying and bleaching operation)	--	--	--	--	--	--	--	--	G-W
22.	48	Leather cutting and stitching (more than 10 machine and using motor)	--	--	--	--	--	--	--	--	G-W
23.	51	Manufacturing of coir items from coconut husks	--	--	--	--	--	--	--	--	G-W
24.	52	Manufacturing of metal caps containers etc	--	--	--	--	--	--	--	--	G-W
25.	55	Manufacturing of shoe brush and wire brush	--	--	--	--	--	--	--	--	G-W
26.	57	Medical oxygen	--	--	--	--	--	--	--	--	G-W
27.	60	Organic and inorganic nutrients (by physical mixing)	--	--	--	--	--	--	--	--	G-W
28.	61	Organic manure (manual mixing)	--	--	--	--	--	--	--	--	G-W
29.	63	Packing of powdered milk	--	--	--	--	--	--	--	--	G-W
30.	64	Paper pins and u clips	--	--	--	--	--	--	--	--	G-W
31.	58	Repairing of electric motors and generators (dry mechanical process)	--	--	--	--	--	--	--	--	O-W
32.	74	Rope (plastic and cotton)	--	--	--	--	--	--	--	--	G-W

33.	76	Scientific and mathematical instrument manufacturing	--	--	--	--	--	--	--	--	G-W
34.	78	Solar module non conventional energy apparatus manufacturing unit	--	--	--	--	--	--	--	--	G-W
35.	79	Solar power generation through solar photovoltaic cell, wind power and mini hydel power (less than 25 MW)	--	--	--	--	--	--	--	--	G-W
36.	83	Surgical and medical products assembling only (not involving effluent / emission generating processes)	--	--	--	--	--	--	--	--	G-W

Note : Under the column Revised Category, the full forms of the abbreviations are as follows :

- a. R-R means original category was Red and revised category is also Red
- b. R-O means original category was Red and revised category is Orange
- c. O-O means original category was Orange and revised category is also Orange
- d. O-G means original category was Orange and revised category is Green
- e. O-W means original category was Orange and revised category is White
- f. G-O means original category was Green and revised category is Orange
- g. G-G means original category was Green and revised category is also Green
- h. G-W means original category was Green and revised category is White





केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
(पर्यावरण एवं वन मंत्रालय, भारत सरकार)
(MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

No. B-29012/ESS/CPA/2015-16

19.08.2015

Sub: "Harmonization of Classification of industries under Red / Orange / Green / White Categories".

During the Conference of the Environment Ministers of States held in New Delhi during April 06-07, 2015, it was resolved to adopt pollution potential criteria for categorization of Red, Orange & Green categories of industries and that a Committee be constituted with State representatives. Further, in the 59th Conference of Chairmen & Member Secretaries of Pollution Control Boards/PCCs held in New Delhi on April 08, 2015, it was agreed to constitute a Committee to look into categorization system of industries based on their respective pollution potential index.

2. Accordingly, a Committee comprising the Chairmen of CPCB, APPCB, TNPCB, MPPCB, MPCB, PPCB, WBPCB and MS, CPCB was constituted vide CPCB OM dated 23.04.2015 to review & classify industrial sectors into different categories based on criteria of respective pollution potential indices.
3. The existing Red (85 sectors) , Orange (73 sectors) and Green (86 sectors) industrial sectors have been assessed as per the proposed formula by a group of Scientists from CPCB . For this purpose , concerned Engineers / Scientists from the Member SPCBs of the Committee were also involved & consulted during May28-29, 2015.
4. After careful examination and consideration of the suggestions of concerned stake-holders the "Draft Document on Revised Concept of Categorization of Industrial Sectors " is prepared by the Committee .

In this context, the Undersigned is directed to forward a copy of the " Draft Document on Revised Concept of Categorization of Industrial Sectors to all the SPCBs, PCCs and concerned Ministries for their comments. Accordingly, the same is enclosed herewith and all the SPCBs, PCCs and concerned Ministries are, hereby requested to provide their comments by 04.09.2015. The comments may kindly be sent through hard copy as well as soft copy at e-mail: nkgupta.cpcb@nic.in , nkgpcb@hotmail.com .

Encl : As above

[N.K. Gupta]
Incharge - ESS

To:

1. All the State Pollution Control Boards / Pollution Control Committees
2. The Secretary, Ministry of Micro Small and Medium Enterprises, New Delhi
3. The Secretary, Ministry of Heavy Industries & Public Enterprises, New Delhi
4. The Advisor & Incharge , CP Division, MoEFCC, New Delhi
5. CPCB Website

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032

'Parivesh Bhawan', East Arjun Nagar, Delhi - 110032

दूरभाष / Tel. : 43102030, फैक्स / Fax : 22305793, 22307078, 22307079, 22301932, 22304948

ई-मेल / e-mail : cpcb@nic.in वेबसाइट / Website : www.cpcb.nic.in



SPEED POST

CPCB/IPC-VI/ROGW/

12.01.2021

To

The Member Secretary
SPCB/PCC
(as per the list)

Sub: Harmonization of Classification of Industrial Sectors into Red, Orange, Green and White Categories-reg.

This has reference to CPCB Directions issued u/s 18(1)(b) of the Air and Water Act on 07.03.2016, regarding 'Harmonization of classification of industrial sectors under Red/Orange/Green/White categories', wherein CPCB has categorized 242 industrial sectors into red, orange, green & white categories and directed all SPCBs/PCCs for its adoption and implementation. The SPCBs/PCCs were also directed that addition of any new or left-over industrial sectors and their categorization, which is not listed in the categorization done by CPCB, shall be carried-out by a Committee at the level of concerned SPCB/PCC, in accordance with the revised criteria and guidelines of CPCB.

Further, a need was felt to categorize some industrial sectors on PAN-India level and to resolve anomalies in categorization, if any. Accordingly, CPCB constituted a Committee to deal with the matter related to categorization of industrial sectors under red/orange/green/white categories.

Subsequently, CPCB categorized (i) Scrapping Centre (ii) Used Cooking Oil Collection Centre (iii) Compressed/Refined Bio-gas production from bio-degradable waste & (iv) Railway Stations, vide directions dated 30.04.2020, and categorized (i) Dairy Farms & (ii) Gaushalas, vide directions dated 10.07.2020, for adoption and implementation.

Further, the CPCB Committee on categorization, in its meetings held on 21.07.2020, 11.08.2020 and 24.08.2020, categorized the following three sectors, the details of which are given at **Annexure-I**:

- i. Building and Construction Projects, having built-up area up to 20,000 m² and waste water generation \geq 50 KLD.
- ii. Construction and Demolition (C&D) Waste Processing Plants.
- iii. Gold Assaying & Hallmarking Centres

All SPCBs/PCCs are directed to adopt and implement the categorization of these sectors and submit the Action Taken Report (ATR), in this regard to CPCB, within 15 days.

Yours faithfully,


(Prashant Gargava)
Member Secretary

Encl: as above

Copy to:

- 1 The Joint Secretary (CP Division)
Ministry of Environment, Forests
& Climate Change,
Indira Paryavaran Bhawan,
3rd Floor, Prithivi, Aliganj, Jor Bagh Road,
New Delhi -110 003
- 2 All Regional Directors, CPCB
(as per list)
- 3 Div. Head, UPC-I, CPCB, Delhi
- 4 Div. Head, IPC-V, CPCB, Delhi
- 5 Div. Head-IT, CPCB, Delhi

: *with a request to upload
this letter on CPCB
website*


(Prashant Gargava)

Categorization of (i) Building and Construction Projects, (ii) Construction and Demolition (C&D) Waste Processing Plants and (iii) Gold Assaying & Hallmarking Centres

Sl. No.	Sl. No. (as per CPCB Document)	Non-Industrial Operations (Activities/Facilities/Infrastructure/Services)	W1	W2	W	A1	A2	A	H	Pollution Index (PI)	Category	Remarks
1.	88	Building and Construction Projects, having built-up area up to 20,000 m ² and waste water generation \geq 50 KLD	20	--	20	--	--	--	--	50	Orange	<ul style="list-style-type: none"> i. Waste water is generated due to domestic use. ii. Projects having overall waste water generation of 50 KLD or more are considered for categorization. However, projects having waste water generation <50 KLD are also required to treat/manage sewage with appropriate systems such as soak pit, septic tank, STP etc. or direct discharge into sewer connected with terminal STP etc., as per the prescribed guidelines/norms. iii. If the discharge \geq 100 KLD, it will have the normalized score (pollution index) of 75 and hence, be categorized as Red.
2	89	Construction and Demolition (C&D) Waste Processing Plants	12	--	12	20	--	20	--	50	Orange	<ul style="list-style-type: none"> i. It is mainly air polluting process/activities. ii. Air pollution score is normalized to 100. iii. Waste water of high TDS of inorganic nature is generated in wet processing units. iv. In case of ancillary units/operations such as manufacturing of tiles, bricks, blocks etc. are associated, the categorization may change, depending on the process and waste generation.
3.	90	Gold Assaying & Hallmarking Centres	-	--	-	25	--	25	10	58.33	Orange	<ul style="list-style-type: none"> i. There is no wastewater generation from the process. ii. Lead oxide, nitrous fumes are generated during cupellation and parting acid treatment, respectively contributing to the air emissions. iii. The hazardous waste is generated during fire assay in the form of spent cupels bearing lead, spent acid, scrubbed water etc. This HW is required to be disposed at TSDFs. iv. All the Gold Assaying & Hallmarking Test Centres certified by BIS shall follow the "Environmental Guidelines for Gold Assaying & Hallmarking Centres", issued by CPCB.

To:

Address List of Member Secretary, SPCBs/PCCs	
1. The Member Secretary Andhra Pradesh State Pollution Control Board D.No. 33-26-14 D/2, Near Sunrise Hospital, Pushpa Hotel Centre, Chalmvari Street, Kasturibaipet, Vijayawada- 520010 Andhra Pradesh	2. The Member Secretary Arunachal Pradesh State Pollution Control Board 'ParyavaranBhavan', Yupla Road, PappuNallah, Naharlagun – 791110 Arunachal Pradesh
3. The Member Secretary Assam State Pollution Control Board Bamunimaidan, Guwahati – 781021 Assam	4. The Member Secretary Bihar State Pollution Control Board PariveshBhawan, Plot No.N-B/2, Patliputra Industrial Area Patna-800023
5. The Member Secretary Chhattisgarh Environment Conservation Board ParyavasBhawan, North Block Sector-19 NayaRaipur – 492 099 Chhattisgarh	6. The Member Secretary Goa State Pollution Control Board Dempo Tower, EDC Plaza, 1 st floor Patto Plaza, Panaji, Goa – 403001
7. The Member Secretary Gujarat State Pollution Control Board Sector 10-A, Gandhi Nagar – 382043 Gujarat	8. The Member Secretary Haryana State Pollution Control Board C-11, Sector 6, Panchkula, Haryana 134109
9. The Member Secretary Himachal Pradesh State Pollution Control Board ParyavaranBhavan, Phase III, New Shimla – 171009 Himachal Pradesh	10. The Member Secretary J&K State Pollution Control Board, Parivesh Bhawan, Forest Complex, Gladni, Narwal, Transport Nagar, Jammu & Kashmir (J&K)
11. The Member Secretary Jharkhand State Pollution Control Board T.A Building, HEC Campus, P.O. Dhurwa Ranchi – 834004 Jharkhand	12. The Member Secretary Karnataka State Pollution Control Board ParisaraBhavan, 4 th & 5 th floors, Church Street, Bangalore – 560 001 Karnataka
13. The Member Secretary Kerala State Pollution Control Board Plamoodu Junction, Pattam Palace P.O. Thiruvananthapuram – 695004 Kerala	14. The Member Secretary Maharashtra State Pollution Control Board Kalpataru Point, 3 rd & 4 th floors Sion Matunga Scheme Road No. 6 Opp. Cine Planet, Sion Circle, Sion (E), Mumbai 400 022 Maharashtra
15. The Member Secretary Madhya Pradesh Pollution Control Board ParyavaranParisar, E-5 Arera Colony Bhopal – 462016 Madhya Pradesh	16. The Member Secretary Manipur State Pollution Control Board Lamphelpat, Imphal West D.C. Office Complex – 795004 Manipur
17. The Member Secretary Meghalaya State Pollution Control Board Arden, Lumpyngngad, Shillong – 793014 Meghalaya	18. The Member Secretary Mizoram State Pollution Control Board New Secretariat Complex, Khatla, Thlanmual Peng, Aizwal Mizoram- 796001
19. The Member Secretary Nagaland State Pollution Control Board Signal Point, Dimapur, Nagaland – 797112 Nagaland	20. The Member Secretary Odisha State Pollution Control Board ParibeshBhawan A-118, Nilakanta Nagar, Unit –VIII, Bhubaneshwar – 751012. Odisha

To:

21.	The Member Secretary Punjab State Pollution Control Board Nabha Road, ITI Rd, Adarsh Nagar, Prem Nagar, Patiala - 147001. Punjab	22.	The Member Secretary Rajasthan State Pollution Control Board A-4 Institutional Area, JhalaneDungri Jaipur – 302004. Rajasthan
23.	The Member Secretary Sikkim State Pollution Control Board State land Use & Environment Cell Govt. of Sikkim, Deorali, Gangtok. Sikkim	24.	The Member Secretary Tamil Nadu Pollution Control Board No. 76, Mount Salai, Guindy, Chennai - 600032. Tamil Nadu
25.	The Member Secretary Telangana State Pollution Control Board ParyavaranBhavan A-3, Industrial Estate, Sanath Nagar, Hyderabad – 500 018. Telangana	26.	The Member Secretary Tripura State Pollution Control Board Parivesh Bhawan, Pt. Nehru Complex, Gorkhabasti P.O., Kunjaban, Agartala, West Tripura - 799 006. Tripura
27.	The Member Secretary Uttarakhand Pollution Control Board Gaura Devi Bhawan, 46 B IT Park Sahastradhara, Dehradun- 248001 Uttarakhand	28.	The Member Secretary Uttar Pradesh State Pollution Control Board Building.No. TC-12V VibhutiKhand, Gomti Nagar, Lucknow– 226010. Uttar Pradesh
29.	The Member Secretary West Bengal State Pollution Control Board ParibeshBhavan Building, No.10-A, Block –LA, Sector 3, Salt Lake City, Kolkata – 700 091. West Bengal		
30.	The Member Secretary Andaman & Nicobar Islands Pollution Control Committee Department of Science & Technology Dollyganj Van Sadan, Haddo P.O., Port Blair-744102 Andaman & Nicobar	31.	The Member Secretary Chandigarh Pollution Control Committee ParyavaranBhawan Madhya Marg, Sector - 19 B, Chandigarh – 160019. Chandigarh
32.	The Member Secretary Daman, Diu & Dadra Nagar Haveli Pollution Control Committee Office of the Deputy Conservator of Forests Moti Daman, Daman – 396220. Daman & Diu	33.	The Member Secretary Delhi Pollution Control Committee 4 th floor, ISBT Building, Kashmeri Gate, Delhi - 110006. Delhi
34.	The Member Secretary Lakshadweep Pollution Control Committee Lakshadweep Administration Department of Science, Technology & Environment Kavarati – 682555. Lakshadweep	35.	The Member Secretary Puducherry Pollution Control Committee Department of Science, Technology & Environment Housing Board Complex, 3 rd floor, Anna Nagar, Pondichery – 600 005

To:

Address list of Regional Directors, CPCB

1.	The Regional Director Regional Directorate (East) Central Pollution Control Board 502, Southend Conclave 1582, Rajdanga Main Road Kolkata-700107	2.	The Regional Director Regional Directorate (Vadodara) Parivesh Bhawan, Opp. Ward No. 10 VMC Office Subhanpura, Vadodara – 390 023 Gujarat
3.	The Regional Director Regional Directorate (North-East) Central Pollution Control Board TUM-SIR, Lower Motinagar, Near Fire Brigade H.Q Shillong-793014	4.	The Regional Director Regional Directorate (Central) Central Pollution Control Board 3 rd Floor, Sahkar Bhawan North T.T Nagar Bhopal- 462003
5.	The Regional Director Regional Directorate (North) Central Pollution Control Board Ground Floor, PICUP Bhawan Vibhuti Khand, Gomti Nagar Lucknow- 226020	6.	The Regional Director Regional Directorate (South) Central Pollution Control Board 1 st & 2 nd Floors, Nisarga Bhawan A-Block, Thimmaiah Main Road 7 th D Cross, Shivanagar Opposite Pushpanjali Theatre Banglore 560010
7.	The Regional Director Regional Directorate (Chandigarh) Central Pollution Control Board Parivesh Bhawan, East Arjun Nagar, Delhi-110032	8.	The Regional Director Regional Directorate (Pune) Central Pollution Control Board Parivesh Bhawan, East Arjun Nagar, Delhi-110032
9.	The Regional Director Regional Director - Chennai Central Pollution Control Board 77-A, Second Floor South Avenue Road, Ambattur Industrial Estate, Ambattur Taluk, Thiruvallur District, Chennai - 600 058		

**GUIDELINES ON
ENVIRONMENTAL MANAGEMENT OF
CONSTRUCTION & DEMOLITION (C & D)
WASTES**

**(Prepared in compliance of Rule 10 sub-rule 1(a) of C & D Waste
Management Rules, 2016)**



Illegal dumping causes loss of potential to reuse / recycle of C&D wastes

MARCH 2017



CENTRAL POLLUTION CONTROL BOARD

(Ministry of Environment, Forests & Climate Change)

GUIDELINES ON ENVIRONMENTAL MANAGEMENT OF C & D WASTES

(Prepared in compliance of Rule 10 sub-rule 1(a) of C & D Waste
Management Rules, 2016)

MARCH 2017



CENTRAL POLLUTION CONTROL BOARD

(Ministry of Environment, Forests & Climate Change)

एस.पी.एस. परिहार, भा.प्र.से.
अध्यक्ष

S.P.S. PARIHAR, I.A.S.
Chairman



केन्द्रीय प्रदूषण नियंत्रण बोर्ड
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
(भारत सरकार)

CENTRAL POLLUTION CONTROL BOARD
Ministry of Environment, Forest & Climate Change
(Government of India)

Foreword

The Swachh Bharat Mission (MoUD) envisages processing of 100% solid waste generated in cities / towns by 2nd October 2019 as a key objective, which includes Construction and Demolition (C&D) wastes.

In course of preparation of these Guidelines it was noted that there are uncertainties in estimating the quantum of C&D waste generation, this can be attributed to several reasons like different methods adopted to estimate quantum of C&D waste generated, varying pace of developmental activities in cities, re-development of cities due to rapid urbanisation wherein demolition activities become necessary. Literature survey also indicated that the quantum and composition of C&D waste is project specific. It is also learnt that in the past Guidelines on C&D wastes have been brought out by CPWD under Guidelines for Sustainable Habitat - PART IV: Guidelines on reuse and recycling of Construction and Demolition (C&D) Waste (March 2014)' and also by Building Materials and Technology Promotion Council (BMTPC) titled "Guidelines for utilization of C&D waste in construction of dwelling units and related infrastructure in housing schemes of the Government (year 2016)".

CPCB has brought '**Guidelines on Environmental Management of C & D Wastes**' in compliance of Rule 10 sub-rule 1(a) of the C&D Waste Management Rules, 2016 and has attempted to address the issues pertaining to abatement of adverse environmental impacts arising from C&D waste management activities. These issues were not discussed in the Guidelines prepared by CPWD & BMTPC.

The guidance from expert members of 'Committee for implementation of C&D Waste Management Rules 2016' and feedback on the draft Guidelines on the website of CPCB are acknowledged. Unlike other rules addressing various key urban wastes such as MSW, plastic wastes, BMW, the Construction and Demolition (C&D) Waste Management Rules, 2016 are NEW rules that were notified on 29th March, 2016 by MoEF&CC. These Guidelines are expected to be helpful to all stakeholders and to academic institutions in carrying out further research on the subject.

(S. P. SINGH PARIHAR)

March 2017



'परिवेश भवन', सी.बी.डी.-कम-ऑफिस कॉम्प्लैक्स, पूर्वी अर्जुन नगर, दिल्ली-110032
'PARIVESH BHAWAN', C.B.D.-CUM-OFFICE COMPLEX, EAST ARJUN NAGAR, DELHI-110 032
PHONE : 22307233, TEL. / FAX : +91-11-22304948, e-mail : ccb.cpcb@nic.in

ACKNOWLEDGEMENTS

‘Committee for implementation of C & D Waste Management Rules 2016’

Member Secretary, Central Pollution Control Board (CPCB)	Dr. A.B. Akolkar
Ministry of Environment, Forest & Climate Change (MoEF&CC)	Amardeep Raju
Central Road Research Institute (CSIR-CRRI)	Dr. Sudhir Mathur
Central Public Works Department (CPWD)	M.C. Gautam, C.H. Ramaraju
Bureau of Indian Standards (BIS)	Divya. S
Municipal Corporation Delhi (MCD) - Urban Local Body	Pradeep Khandelwal
Building Materials & Technology Promotion Council (BMTPC)	J.K. Prasad
Infrastructure Leasing & Financial Services Ltd. (IL&FS) Environment	Arun Kumar Sharma
National Council for Cement and Building Materials (NCB) - Centre for Construction Development & Research	Amit Trivedi
Indian Road Congress (IRC)	D. Sam Singh Nayagam
Urban Pollution Control Division (UPCD), CPCB	Mita Sharma, Sct. ‘E’
Supported by UPCD Staff	K.N. Dash, Sct. ‘C’ Dr. Kanika Sharma, RA

Note: All photographs are taken from internet.

Index of Contents

SECTION I: Objective and Scope

1. Urban waste management
2. Swachh Bharat Mission
3. C & D Waste Management Rules, 2016 - Notification
4. C & D waste – definition , applicability and waste generating activities
5. Objectives and scope of the Guidelines

SECTION II: Quantum & composition of C & D waste generation

1. Definition of C & D waste generator and bulk generators
2. Uncertainty in quantum of generation of C & D waste
3. Estimation of C & D waste generation for India
4. Composition of C & D waste is project specific

SECTION III: Initiatives in promoting C & D waste products by GoI

1. The Rules promotes C & D waste utilization
2. Type of C & D wastes products proposed under Rules
3. Thrust areas in C & D waste management – National Building Code (NBC)
4. Initiatives to promote recycling of C & D waste in India
5. Roadmap for C & D waste management - Targets & timelines

SECTION IV: C & D waste processing

1. Hierarchy in waste management
2. Importance of recycling C & D Wastes
3. ‘Sustainable Model’ on C & D waste management

SECTION V: Existing Guidelines on C & D waste management

1. *Guidelines w.r.t. Building Sector - Building Materials and Technology Promotion Council (BMTPC)*
2. *Guidelines w.r.t. Building Sector - Central Public Works Department (CPWD)*
3. *Guidelines w.r.t. ROAD Sector*
4. Need for inclusion of abatement of adverse environmental impacts in C & D waste management

SECTION VI: Introduction to Guidelines on Environmental Management of C& D Wastes

1. Environmental degradation due to indiscriminate disposal of C & D wastes in cities
2. Need for Environmental Management of pollutants highlighted under C & D Waste Management Rules
3. Effective C & D Waste Management – Opportunities for resource conservation & employment generation

4. Major operations in C & D processing plant
5. Overview of Construction & Demolition activities
6. Guidelines on Environmental Management of C & D Waste Management in India

**SECTION VII: Guidelines on Environmental Management of C & D Wastes –
NOISE management**

1. Public complaints on NOISE generation
2. Restrictions on noise from construction equipment - Noise Pollution (Regulation and Control) Rules, 2000
3. Guidelines for NOISE mitigation in C & D operations
 - a. Noise abatement - Machinery deployed in construction / demolition activities
 - b. Noise abatement - Genset noise
 - c. Noise abatement - due to vehicle movement
 - d. Noise abatement measures - Other areas

**SECTION VIII: Guidelines on Environmental Management of C & D Wastes –
DUST management**

1. DUST – environmental pollutant in C & D waste operations
2. Guidelines for DUST mitigation in C & D operations
 - a. Dust Noise abatement - Dust from loading / unloading operations
 - b. Dust abatement - due to vehicle movement
 - c. Dust abatement – due to machinery used in C & D operations
 - d. Compliance of National Ambient Air Quality Standards (NAAQS)
3. Other dust abatement measures and safety issues
 - i. Water requirement
 - ii. Use of treated waste water (preferably) in sprinklers for dust suppression
 - iii. Waste water management
 - iv. Residual waste disposal
 - v. Diesel use
 - vi. Plantation / greenery
 - vii. Emergency facilities
 - viii. Protective gear
 - ix. Training / Awareness program

**SECTION IX: Guidelines on Environmental Management of C & D Wastes –
Other issues**

1. Importance of processing C & D Wastes - Centralized Vs De-centralized
2. Options in C & D waste management - Centralized Vs De-centralized processing / recycling facilities
3. Guidelines on Setback distances (or buffer zone distance)
4. Inspection of C & D waste load
5. C & D waste processing facility – ‘ORANGE’ category activity
6. GOOD PRACTICES proposed : Constraints Vs opportunities in establishing C & D waste management facilities

7. C & D waste management - case study Delhi
8. Initiatives in C & D waste management in 69 cities

ANNEXURE I: Initiatives in C & D waste management in 69 cities (**Literature Survey**)

ANNEXURE II: Potential uses of C & D wastes

ANNEXURE III: Global practices of utilization of C & D wastes

ANNEXURE IV: Criteria for site selection of C & D waste processing facility (SCHEDULE I)

SECTION I

Objective and Scope

1. Urban waste management

Safe and cost-effective management of solid wastes (SW) is a significant environmental challenge for modern society. Rapid urbanization is changing the nature of solid waste management from a low priority, localized issue to an all pervasive social and environmental problem with potential risks to public health and environment. Hence, inadequately managed waste disposal has the potential to affect the health and environment. Management of wastes needs to incorporate the principles of waste minimization and recycling and work towards an integrated processing & disposal facility such that it is both effective, sustainable and economically viable. In most urban wastes ex. Municipal Solid Waste (MSW), Biomedical Waste (BMW) or Construction & Demolition (C & D) Wastes - management of solid waste is required at all stages from waste generation to the final disposal with special attention on the SEGREGATION stage

A general approach to an integrated solid waste management plan would comprise of the following:

- i. understanding the various waste management practices
- ii. identifying waste management needs
- iii. setting targets (physical) for actions required
- iv. identifying budget requirements (financial targets)
- v. identifying the stakeholders & coordinating with to achieve the targets
- vi. arriving at a rational basis for setting up a waste processing / disposal facility
- vii. Select appropriate medium for mass awareness

2. Swachh Bharat Mission

The Swachh Bharat Mission (under MoUD) envisages processing of 100% solid waste generated in cities / towns by 2nd October, 2019 as a key objective, which includes Construction & Demolition wastes. Ministry of Urban Development (MoUD) vide its circular dated 28th June, 2012 stated all states to set up Construction & Demolition Waste recycling / processing facilities in all cities with population of over ONE million (10 laks).

3. C & D Waste Management Rules, 2016 - Notification

Unlike other rules addressing various key urban wastes such as MSW, plastic wastes, BMW, the Construction and Demolition (C & D) Waste Management Rules, 2016 are NEW rules that were notified on 29th March, 2016 by the Ministry of Environment, Forest and Climate Change (MoEF&CC).

4. C & D waste – definition, applicability and waste generating activities

As per Rule 3 (c) "construction and demolition waste" means *waste comprising of building materials, debris and rubble resulting from construction, re-modeling, repair and demolition of any civil structure.*

The rules shall apply to every waste resulting from construction, re-modeling, repair and demolition of any civil structure of individual or organization or authority who generates construction and demolition waste such as building materials, debris, rubble. Wastes like surplus and damaged products and materials arising in the course of construction work or used temporarily during the course of on-site activities come under C&D wastes.

Under Rule 3, the following definitions have been provided:

- a. Subrule (b) "**construction**" means the process of erecting of building or built facility or other structure, or building of infrastructure including alteration in these entities;
- b. Subrule (d) "**de-construction**" means a planned selective demolition in which salvage, re-use and recycling of the demolished structure is maximized;
- c. Subrule (e) "**demolition**" means breaking down or tearing down buildings and other structures either manually or using mechanical force (by various equipment) or by implosion using explosives.

Activities which generate C & D waste in cities / towns are mainly from:

- i. Demolition of existing, old dilapidated structures;
- ii. Renovation of existing buildings (residential or commercial);
- iii. Construction of new buildings (residential or commercial or hotel etc.);
- iv. Excavation/ reconstruction of asphalt/ concrete roads;
- v. Construction of new fly over bridges/ under bridges/ sub-ways etc.;

- vi. Renovation/ Installation of new water/ telephone/ internet/ sewer pipe lines etc.
- vii. Present collection and disposal system.

5. Objectives and scope of the Guidelines

Rule 10 sub-rule 1(a) of C & D Waste Management Rules, 2016 : Duties of the Central Pollution Control Board (CPCB) directs CPCB: to *'prepare operational GUIDELINES related to environmental management of construction and demolition (C & D) waste management'*.

In complying with the above Rule, the Guidelines have been prepared to:

- a. promote an integrated approach, whereby environmental management of construction and demolition waste is given due consideration throughout the duration of the project;
- b. approach towards reduction of environmental impacts.

The guidelines recommends pollution mitigation measures in operation of C & D dump sites / waste processing facilities. Though guidelines focus mainly on facilities generating more than 20 tons or more in one day or 300 tons per project in a month of installed capacity (bulk generators) in cities / towns however, the mitigation measures suggested can be scaled accordingly after consultation with the concerned departments in the state government. The reference to 'operators' in these Guidelines imply operators of bulk C & D waste management / waste recycling / processing facilities.



Figure 1.1: Indiscriminate dumping of C & D wastes along roadsides

SECTION II

Quantum & Composition of C & D Waste Generation

1. Definition of C & D waste generator and bulk generators

As per Rule 3 (j) **“waste generator”** means *any person or association of persons or institution, residential and commercial establishments including Indian Railways, Airport, Port and Harbour and Defence establishments who undertakes construction of or demolition of any civil structure which generate construction and demolition waste.*

Under the Rules w.r.t. quantum of waste generation addresses those sources generating more than 20 tons or more in one day or 300 tons per project in a month of installed capacity (BULK C&D waste GENERATORS).

2. Uncertainty in quantum of generation of C & D wastes

During preparation of these Guidelines it was noted that there are uncertainties in the estimations of quantum of C & D waste generation, this can be attributed to several reasons like different methods adopted to estimate quantum of C & D waste generated, varying pace of developmental activities in cities, re-development of cities due to rapid urbanization wherein demolition activities become necessary. Though the quantum of C & D waste generation vary, however, it is estimated to account for approx. 25 - 30 percent of total solid waste generated. Some estimations of C & D wastes are provided below:

From MoUD:

- a. *10 MT -15 MT (MT – million tonnes) per year by MoUD (2000);*
- b. *Approximately 25-30 million tonnes of C & D wastes is generated annually in India of which 5% is processed*
- c. *The amount of C & D wastes in India has been estimated to be 10 - 12 million tonnes annually and the proportion of concrete estimated as 23 to 35% of total waste. Considering 30% percent of C & D wastes of 12 million tonnes as concrete, and 50% of the concrete as coarse aggregate, the total available recycled concrete aggregate (RCA) in India is of the order of 1.8 million tonnes annually.*

The quantum of generation of C & D waste estimates available from other sources are summarized below:

- 12 MT - 15 MT by TIFAC (2001);
- 10 MT -12 MT by MoEF (2010) and
- 12 MT by CPCB
- 165-175 MT per annum between 2005-2013 (BMTC)

Forecast estimates: Presently, C & D waste generation in India accounts upto **23.75 million tons** annually and these figures are likely to double fold upto **2016**. (Source: International Society of Waste Management, India).

Table 2.1: C & D waste generation in NINE cities

City	Area (Metropolitan region, km ²)	POPULATION (CENSUS 2011)	No. of Wards / Zones	ULB	C & D WASTE GENERATION (TONNES PER DAY)
Chennai	1,189	6,500,000	200/15	Chennai Municipal Corporation (As per discussions with IIT-Madras)	2,500
Coimbatore	-	2,618,940	100/5	Coimbatore City Municipal Corporation (CCMC, 2015)	92
Bengaluru*	-	8,443,675	198/5	Greater Bengaluru Municipal Corporation (BBMP)(TIFAC, 2001)*	875
Mumbai	4,355	12,442,373	24/6	Municipal Corporation of Greater Mumbai (www.mcgm.gov.in)	2,500
Ahmedabad	-	6,063,047	64/6	Ahmedabad Municipal Corporation (As per discussions with AMC officials)	700
Patna*	99.45	2,514,590	72/4	Patna Municipal Corporation (TIFAC, 2001)*	250
Jaipur*	-	3,471,847	91/8	Jaipur Municipal Corporation (TIFAC, 2001)*	200
Bhopal*	-	1,917,051	70/14	Bhopal Municipal Corporation (TIFAC, 2001)*	50
Kolkata	-	4,496,694	144/-	Kolkata Municipal Corporation (As per discussions with KMC)	1,600

*Due to unavailability of data for these cities, 25% of MSW was taken as C & D waste based on TIFAC, 2001 study; Ref. (a) A Baseline Study of the Automotive and Construction Sectors: GIZ, IFEU, TERI, VDI, Development Alternatives (DA) (b) Market study on C & D waste utilization in Ahmadabad: GIZ & DA.

3. Estimation of C & D waste generation for India

Literature survey indicated that the composition of C & D waste varies and is particularly project specific. There are various methods employed to quantify the C & D waste generation at both regional and project levels.

Project level (India): Technology Information, Forecasting and Assessment Council's (TIFAC) has developed some estimations on C & D waste generation which recognizes that the generation is project specific as follows:

- a. Range 40-60 kg per sq.m of new construction,
- b. Range 40-50 kg per sq.m of building repair,
- c. Range 300-500 kg per sq.m for demolition of buildings.

From the above, it may be noted that the highest waste generation arises from demolition of buildings.

Regional level : C & D waste generation figures for any region fluctuate as it depends largely on the type & nature of construction / demolition activities of the project concerned. Various approaches for estimation of C & D waste generation in literature include the following:

- i. The following FIVE categories of existing C & D waste quantification methodologies are reported :
 - a. Site visit method
 - b. Waste generation rate method
 - c. Lifetime analysis method
 - d. Classification system accumulation method
 - e. Variables modelling method

(Ref. Quantifying Construction and Demolition Waste: An Analytical Review, Volume 34, Issue 9, September 2014, Pages 1683–1692, Elsevier Ltd.).

Approach to estimate C & D waste is through materials flow analysis is embedded in above methods.

- ii. Estimation of C & D waste generation based on per capita multipliers or waste generation rate model. (International J. Global Environmental Issues, Vol. 12, Nos. 2/3/4, 2012, Waste quantification models for estimation of construction and demolition waste generation: a review).

Table 2.2: C & D (%) waste - by activity in the United States
(Ref: BMTPC, 2016)

C & D waste type	Residential	Non residential	Total
<i>New Construction</i>	11%	6%	8%
<i>Renovation</i>	55%	36%	44%
<i>Demolition</i>	34%	58%	48%
<i>Total (%)</i>	100%	100%	100%

4. Composition of C & D waste is project specific

- a. The composition of C & D waste can vary depending on age of building being demolished / renovated or the type of buildings being constructed. As mentioned earlier, C & D waste generation figures for any region varies as it depends largely on the type and nature of construction / demolition project activities which may be regional / site / project specific.

Under Rule 4 sub-rule (3) the segregation by bulk C & D waste generators shall be done into four streams such as:

- i. Concrete
 - ii. Soil
 - iii. Steel, wood and plastics
 - iv. Bricks & mortar
- b. Demolition waste characteristics: In India, when old buildings are demolished the major demolition waste is soil, sand and gravel accounting for bricks (26%) & masonry (32%), Concretes (28%), metal (6%), wood (3%) others (5%). Bricks, tiles, woods and iron metal are sold for reuse / recycling (BMTPC).
- c. Excavations, concrete, masonry and wood together constitute over 90% of all C & D waste.
- d. The typical composition of Indian C & D waste:
The major constituents are concrete, soil, bricks, wood, asphalt and metal. Brick & masonry, soil, sand & gravel account for over 60% of total waste. (Source- Municipal Corporation of Delhi, Burari facility).

Table 2.3: Typical composition of Indian C & D waste
(TIFAC, 2001)

Material	Composition
Soil, Sand & Gravel	36%
Brick & Masonary	31%
Concrete	23%
Metals	5%
Bitumen	2%
Wood	2%
Others	1%



Figure 2.1: Indiscriminate dumping of C & D wastes along roadsides

SECTION III

Initiatives in Promoting C & D Waste Products by GoI

1. The Rules promote C & D waste utilization

The Construction and Demolition (C & D) Waste Management Rules, 2016 promotes C & D waste utilization.

Under Rule (6) under Duties of Local Authority, the following sub-rules states:

- i. sub-rule (9) 'shall device appropriate measures in consultation with expert institutions for management of construction and demolition waste generated including processing facility and for using the recycled products in the best possible manner';
- ii. sub-rule (10) 'shall create a sustained system of information, education and communication (IEC) for construction and demolition waste through collaboration with expert institutions and civil societies and also disseminate through their own website';
- iii. sub-rule (11) 'shall make provision for giving incentives for use of material made out of construction and demolition waste in the construction activity including in non-structural concrete, paving blocks, lower layers of road pavements, colony and rural roads'.

Under Rule (7) mentions the 'Criteria for storage, processing or recycling facilities for construction and demolition (C & D) waste and application of construction and demolition waste and its products'.

Under **Schedule I** (Rule (7) (1)): 'Construction and demolition waste shall be utilized in sanitary landfill for municipal solid waste of the city or region as mentioned under Schedule I'.

- a. The Rule (7) sub-rule (3) gives Application of materials made from construction and demolition waste in operation of sanitary landfill shall be as per the criteria given in **Schedule II**.
- b. The Rule (9) sub-rule (4) mentions that the 'Procurement of materials made from construction and demolition waste shall be made mandatory to a certain percentage (say 10-20%) in municipal and Government contracts subject to strict quality control'.
- c. Rule (11) under Duties of Bureau of Indian Standards (**BIS**) and Indian Roads Congress (**IRC**) 'The Bureau of Indian Standards and Indian Roads Congress shall be responsible for preparation of code of

practices and standards for use of recycled materials and products of construction and demolition waste in respect of construction activities and the role of Indian Road Congress shall be specific to the standards and practices pertaining to construction of roads’.

2. Type of C & D wastes products proposed under Rules

The C & D wastes products suggested under the Construction and Demolition (C & D) Waste Management Rules, 2016 are as follows:

- i. Under Rule (6) under Duties of Local Authority : sub-rule (11) ‘shall make provision for giving incentives for use of material made out of construction and demolition waste in the construction activity including in non-structural concrete, paving blocks, lower layers of road pavements, colony and rural roads’.
- ii. Under **Schedule I** (Rule (7) (1)): ‘Construction and demolition waste shall be utilized in sanitary landfill for municipal solid waste of the city or region as mentioned under Schedule I’.
- iii. The Rule (7) sub-rule (3) gives Application of materials made from construction and demolition waste in operation of sanitary landfill shall be as per the criteria given in **Schedule II**.

3. Thrust areas in C & D waste management – National Building Code (NBC)

Some key thrust areas regarding C & D waste reuse / recycling:

- a. *Establish utilization of C & D wastes in concrete and concrete based products by preparing standards.*
- b. Quality control and certification.
- c. *Need for popularizing products from C & D waste.*
- d. R&D activities on continuous basis in tandem with manufacturing industry and users.
- e. *Achieving environment protection through C & D waste utilization.*
- f. Optimizing utilization pattern of traditional materials by interfacing the same with supplementary materials.

4. Initiatives to promote recycling of C & D waste in India

India has provisions for the protection and improvement of the environment in its constitution. *“The demand for aggregates in 2007 has seen an increase by five percent, to over 21 billion tonnes, the largest being in developing countries for example India”*. (Study by Asian Institute of Technology (AIT), Thailand for some Asian countries included India, report released in May 2008). Construction accounts for nearly 65 per cent of the total investment in infrastructure and the trend is increasing, hence it is more important to know how to effectively manage C & D waste w.r.t. reuse & recycle. Some key initiatives on C & D waste management in India is given below :

- a. **Ministry of Urban Development (MoUD)** : Ministry of Urban Development vide circular dated June 28, 2012, directed States to set-up such facilities in all cities with a population of over 10 lakhs (one million plus cities) to establish environment friendly C & D recycling facilities (reference base being the first C & D waste processing facility commissioned in Delhi in Burari model). The MoUD report ‘Technical Aspects of Processing and Treatment of Municipal Solid Waste’, Swach Bharat Mission (MoUD, 2016) also recognises the need for C & D waste management (Page 227).
- b. **Ministry of Environment, Forest & Climate Change (MoEF&CC)**: Environmental considerations have been integrated into all levels and in National Environment Policy of 2006, incorporation of the concept of 3Rs, is reflected in all the notified waste management rules (MSW, plastic, BMW, HW, e-wastes). A Report of the Committee to ‘Evolve Road Map on Management of Wastes in India (2010)’ highlights C & D problems, it recognised the utility of the waste and also acknowledged lack of data on the waste generation. The C & D Waste Management Rules, 2016 were notified by MoEF&CC vide notification no. G.S.R. 317(E) dated 29th March, 2016.
- c. **Bureau of Indian Standards (BIS)** : Under the Construction and Demolition (C & D) Waste Management Rules, 2016 Rule (11) under Duties of Bureau of Indian Standards (**BIS**) and Indian Roads Congress (**IRC**), *‘The Bureau of Indian Standards and Indian Roads Congress shall be responsible for preparation of code of*

practices and standards for use of recycled materials and products of construction and demolition waste in respect of construction activities.

Role of Standards (BIS) in Utilization of C & D Wastes:

- i. It is the basis for acceptance
- ii. Wider use by increasing confidence in users consumers
- iii. Transfer of technology
- iv. Scope for review / amendment / revision / withdrawal
- v. Techno-legal - Part of regulatory documents
- vi. Techno-financial - Part of financing projects
- vii. Basis for training / capacity building and R&D

IS 383 : 2016 Indian Standard COARSE AND FINE AGGREGATE FOR CONCRETE – SPECIFICATION (Third Revision) - Scope: This standard covers the requirements for aggregates, crushed or uncrushed, derived from natural sources, such as river terraces and riverbeds, glacial deposits, rocks, boulders and gravels, and manufactured aggregates produced from other than natural sources, for use in the production of concrete for normal structural purposes including mass concrete works.

These manufactured aggregates are of two types namely:

- i. Recycled Aggregate (RA) — It is made from C & D waste which may comprise concrete, brick, tiles, stone, etc.
- ii. Recycled Concrete Aggregate (RCA) – It is derived from concrete after requisite processing.

BIS IS: 383 is the principal driver, the standard for coarse and fine aggregates for use in concrete was revised in January, 2016, permitting use of recycled aggregates up to 25% in plain concrete, 20% in reinforced concrete of M-25 or lower grade and up to 100% in lean concretes of grade less than M-15.

Table 3.1: IS 383 : 2016 Indian Standard COARSE AND FINE AGGREGATE FOR CONCRETE – SPECIFICATION (Third Revision)

C & D waste BIS IS: 383	Plain Concrete	Reinforced Concrete	Lean Concrete (< M15 grade)	Extent of Utilization
Recycled Concrete Aggregate (RCA)	25%	20% (only upto M25 grade)	100%	as Coarse Aggregate
Recycled Aggregate (RA)	nil	nil	100%	as Coarse Aggregate
Recycled Concrete Aggregate (RCA)	25%	20% (only upto M25 grade)	100%	as Fine Aggregate

National Building Code (NBC- CED 46) of India 2005 : Part 11 of NBC 2005 on 'Approach to Sustainability'(Chapter 11), states that :

- i. Recycled Coarse Aggregate may be used in concrete for bulk fills, bank protection, base/fill of drainage structures, pavements, sidewalks, kerbs and gutters etc.
- ii. Up to 30 percent of natural crushed coarse aggregate can be replaced by the recycled concrete aggregate
- iii. This percentage can be increased up to 50 percent for pavements and other areas which are under pure compression specific to the standards and practices pertaining to construction of roads.'

d. Building Material & Technology Promoting Council (**BMTPC**):

The demand of building materials for 2021-22 has been reckoned by Building Materials and Technology Promotion Council (BMTPC) as cement 380 million tonnes, steel 50 million tonnes, bricks 600 billion numbers, aggregate 400 million cubic meters and timber 40 million cubic meters. Data show that there is a considerable amount of shortage of conventional and traditional building materials in India. BMTPC in 2016 released "Guidelines for utilization of Construction & Demolition waste in construction of dwelling units and related infrastructure in housing schemes of the Government".

e. Central Public Works Division (**CPWD**): The "Guidelines for *Sustainable Habitat* (March 2014)" are based on reports of National Mission on 'Sustainable Habitat' by the Ministry of Urban Development (MoUD) and draft code on "Approach to Sustainability" as part of National Building Code (NBC 2005). The PART IV of the Guidelines for 'Sustainable Habitat' discusses 'Guidelines on reuse and recycling of Construction and Demolition (C & D) waste'. The guidelines on Construction and Demolition (C & D) waste addressed the building industry activity.

f. **CPWD & NBCC**

Approximately 25-30 million tonnes of C & D wastes is generated annually in India of which 5% is processed. To address utilization of C & D wastes, the Central Public Works Department (CPWD) and National Building Construction Company (NBCC) have recommended use of recycled portions of C & D wastes in their construction activities or if the

same is available within 100 km from construction site. Reference was made to the BIS 383 : 2016 standards.

g. Indian Road Congress (**IRC**) :

Under the Construction and Demolition (C & D) Waste Management Rules, 2016, Rule 11 indicates the role of Indian Roads Congress (**IRC**) w.r.t. preparation of code of practices / standards for use of recycled materials and products of construction and demolition waste in respect of road works.

5. Roadmap for C & D waste management - TIMELINES & TARGETS

In MOEF Performance Audit was conducted during July 2007 to December 2007 through document analysis, collection of responses to questionnaires, physical collection and testing of samples. Records and documents relating to the issue in the Performance Audit were examined and a key observation was:

‘MoEF, in consultation with the states, should prepare an action plan for the reduction, reuse and recycling of waste with clearly defined numerical targets as well as timelines for the achievement of targets’.

The following targets / timelines to be considered in C & D waste management, however in some cases the concerned dealing departments may revise them in consultation with experts and project proponents as construction and demolition waste management is project specific.

A. C & D waste management - identification of bulk generators

Under C & D Waste Management Rules, 2016, projects which generate more than 20 tons or more in one day or 300 tons per project in a month are referred to as bulk C & D waste generators.

B. Roadmap for C & D waste management - Population of cities

Under C & D Waste Management Rules 2016, the targets for commissioning C&D processing facilities are based on population as given below:

- i. Cities with population of one million and above
- ii. Cities with population of 0.5 –one million
- iii. Cities with population of less than 0.5 million

C. Roadmap for C & D waste management - TIMELINES

The TIMELINES for achievement of targets: The roadmap for implementation of Construction and Demolition (C & D) Waste

Management Rules, 2016 is under Schedule III [See Rule 13] and reproduced below.

Schedule III [See Rule 13]

Table 3.2: Timeframe for Planning and Implementation

S. No	Compliance Criteria	Cities with population of >=one million	Cities with population of 0.5-01 million	Cities with population of < 0.5 million
1.	Formulation of policy by State Government	12 months	12 months	12 months
2.	Identification of sites for collection & processing facility	18 months	18 months	18 months
3.	Commissioning and implementation of the facility	18 months	24 months	36 months
4.	Monitoring by SPCBs	3 times a year / in 4 months	2 times a year / once in 6 months	2 times a year / once in 6 months

D. Mandate for Utilization of C & D waste products - Numerical targets

- i. Under C & D Waste Management Rules, 2016, the Rule (9) sub-rule (4) mentions that the 'Procurement of materials made from construction and demolition waste shall be made mandatory to a certain percentage (say 10-20%) in municipal and Government contracts subject to strict quality control.'
- ii. Incentivisation recommended under BMTPC Guidelines: (i) All Government constructions may be mandated to use at least 20 per cent of recycled C & D waste products. (ii) The tipping fee for delivery of C & D waste to the recycling plant, terms & conditions of civic body with the concessionaire may be designed to keep the price of C & D waste recycled products about 20 per cent lower than the corresponding conventional products.

E. Incentivize On-site utilization of C & D wastes – numerical targets for C & D Plans

- i. To address utilization of C & D wastes the Central Public Works Department (CPWD) and National Building Construction Company (NBCC) have recommended use of recycled portions of C & D wastes in their construction activities or if the same is available within 100 km from construction site. Reference was made to the

- BIS 383 : 2016 standards similar (or more stringent targets) to be proposed in other projects of both government and private sectors.
- ii. BMTPC guidelines : All renovation projects involving demolition, even in private sector, may be mandated to use at least 20 per cent of recycled C & D waste products.
 - iii. Under the C & D Waste Management Rules 2016 '*Exemption from the compliance of norms (Schedule I (14)), the following are exempted from the norms of pollution from **dust and noise** as mentioned above:*
 - *For construction work, where at least 80 percent construction and demolition waste is recycled or*
 - *Reused in-situ and sufficient buffer area is available to protect the surrounding habitation from any adverse impact.*

iv. Mandate use of C & D waste products

BMTPC Guidelines: As and when C & D waste recycling plant is commissioned at a city, it may be made mandatory for all construction activities to use a specified percentage of building construction materials manufactured from recycled debris.

However, as C & D waste generation is project specific, the State departments may propose practical and achievable reuse / recycle targets in consultation with project proponents.

F. Criteria for setting up C & D waste processing facilities – BMTPC Guidelines

Building Materials and Technology Promotion Council (BMTPC) in year 2016 released "**Guidelines for utilization of C & D waste in construction of dwelling units and related infrastructure in housing schemes of the Government**". Regarding criteria for setting up C & D waste processing facilities it was recommended that the Civic bodies wherein current waste generation > than 2000 tpd, to set up more than one plant for recycling of C & D waste.



Figure 3.1: Indiscriminate dumping of C & D wastes along roadsides

SECTION IV C & D Waste Processing

1. Hierarchy in waste management

According to United Nations Environment Programme (UNEP), waste management includes both, the components of prevention and disposal of waste. The waste management hierarchy can be traced back to the 1970s, when the environment movement started to criticize the practice of disposal-based waste management. It argued 'waste' that is made up of different materials should be treated differently as suggested:

- a. Reduce its production
- b. Explore its reuse and recycle potential
- c. Final disposal

The same is echoed in India's waste management handling Rules either directly or indirectly and it includes C & D wastes.

Table 4.1: Waste management as per Hazardous Waste and Solid Waste Rules

HW Rules, 2016 (Rule 4)	Solid Wastes Rules, 2016 (Rule 3)
<p>Hierarchy in waste management w.r.t. Responsibilities of the occupier for <u>management of hazardous and other wastes</u>-</p> <p>For the management of hazardous and other wastes, an occupier shall follow the following SIX steps, namely:-</p> <ol style="list-style-type: none"> i. Prevention; ii. Minimization; iii. Reuse, iv. Recycling; v. Recovery, utilization including co-processing; vi. Safe disposal. 	<p>Definition #57 "waste hierarchy" means the priority order in which the solid waste should be managed by giving emphasis to prevention, reduction, reuse, recycling, recovery and disposal, with prevention being the most preferred option and the <u>disposal at the landfill being the least</u>;</p>

According to this hierarchy, the priority of any country should be to extract the maximum practical benefits from products and to prevent and minimize the waste that is generated. Prevention is the most desirable waste management option as it eliminates the need for handling, transporting, recycling or disposal of waste. It provides the highest level of environmental protection by optimizing the use of resources and by removing a potential source of pollution. Reducing waste includes any process or activity that avoids, reduces or eliminates waste at its source or results in reuse or recycling. The conventional method of waste disposal desirably is to engineered sanitary landfill. Regarding C & D waste, prevention at source (encourage on – site management) is the desirable approach, since this reduces the quantum of waste to be transported.

2. Importance of recycling C & D Wastes

- a. Re-use and recycling 'wastes' has been promoted in all the waste rules and the importance of these principles applies to C&D waste also.
- b. Two significant forecasts :
 - i. It has been estimated that '*by 2013, 20 million square meters of office space will be completed in India. Half of the demand will come from the **metro-cities**. With the increasing demand for built spaces and scarcity of land, a trend of re-development projects is expected. With increased urbanization and increased housing demands, there will be a shortage of aggregates to the extent of 55,000 million cu.m in housing sector, where as the road sector requires an additional 750 million cu.m. of aggregates. This emphasizes the need of C & D waste management in India. The cost of construction materials is increasing enormously. In India, the cost of cement during 1995 was Rs. 125/kg and in 2012 the price increased to Rs. 330/bag. In case of bricks, the price was Rs. 0.66 per brick in 1995 and the present rate is Rs. 6 per brick in 2012. With the environmental hazards caused by excessive and illegal extraction of river sand, the mining of river sand was banned since April 1, 2012'* (Ref. Report (May 2008) report on practices in C & D waste management in some Asian (includes India) by AIT Thailand).
 - ii. *The amount of C & D wastes in India has been estimated to be 10 - 12 million tonnes annually and the proportion of concrete estimated as 23 to 35% of total waste. Considering 30 % percent of C & D wastes of 12 million tonnes as concrete, and 50 % of the concrete as coarse aggregate, the total*

available recycled concrete aggregate (RCA) in India is of the order of 1.8 million tonnes annually. (CPWD)

The forecasts of shortage of aggregates in construction works opens up scope for recycling / processing of C&D wastes.

- c. Recycling of C & D waste is important as it helps to reduce the dependence on natural resources and eliminates adverse environmental impacts ex. Mining activities, which are energy intensive and highly polluting.
- d. The Hon'ble Court's intervention on the controversy over sand mining in some states focused the need to explore options for recycle, reuse and substitute naturally sourced building material (example sand) hence the spotlight on C & D waste management.
- e. When opportunities for reuse or salvage are exhausted, recycling is the next level. Recycling of C & D wastes has the additional advantage of controlling the quantum of C & D waste destined for disposal at landfills besides reducing transportation costs.
- f. C & D waste materials that can be salvaged for reuse include acoustical ceiling tiles, asphalt, asphalt shingles, carpets, concrete, drywall, fluorescent lights, land clearing debris (vegetation, stumpage, dirt), metals and metal alloys, structural steel, plastic film (sheeting, packaging), glass, wood etc. Besides appliances, bathroom fixtures, bricks, blocks, masonry stone, structural steel, cabinets, carpeting, ceiling tiles, timber and timber based boards, door and window frames and shutters, flooring tiles, stone tiles/platforms, insulation, landscaping materials, lighting fixtures, metal framing including for partitions and ceiling, panelling, pipes, antique moldings, accessories and hardware of furniture, PVC water tanks, roofing sheets used for garages, outdoor areas, fabric of tensile structures etc.
- g. C & D and other inert waste may be utilized for making bricks, pavement blocks, construction materials such as aggregates etc. , there are plants of various capacities in that make bricks, paver blocks, aggregates, etc out of such waste material.

See **ANNEXURE II**: Potential uses of C & D wastes

3. 'Sustainable Model' on C & D waste management

The key components of a 'Sustainable Model' on Construction and Demolition (C & D) Waste Management Rules, 2016 can include the following:

- i. Practical estimation of C & D waste generation
- ii. Identified sites and timely acquisition of land for development of integrated C & D processing facilities with necessary approval from local administration / civic bodies
- iii. Specifications / standards for recycled C & D waste products for quality acceptance
- iv. List out and mandate use of recycled products from C & D wastes
- v. Penalty - Landfill levy
- vi. Map water bodies in a city / region – encroachment of water bodies in cities for generating 'land' is a common practice observed in several cities
- vii. Research on economically viable C & D recycling options
- viii. Awareness campaign – tools for sensitization of general public

Refer **ANNEXURE III**: Global practices of utilization of C & D wastes.



Figure 4.1: Photographs of Construction & Demolition waste processing facility

SECTION V

Existing Guidelines on C & D Waste Management

1. GUIDELINES w.r.t. Building Sector - Building Materials and Technology Promotion Council (BMTPC)

The forecast regarding the demand of building materials for 2021-22 has been reckoned by Building Materials and Technology Promotion Council (BMTPC) which are as follows: 'cement 380 million tonnes, steel 50 million tonnes, bricks 600 billion numbers, aggregate 400 million cubic meters and timber 40 million cubic meters. Data show that there is a considerable shortage of availability of conventional and traditional building materials in India.' BMTPC in year 2016 released "**Guidelines for utilization of C & D waste in construction of dwelling units and related infrastructure in housing schemes of the Government**". The Guidelines pertain to building industry, salient features are given below:

- i. The BMTPC Guidelines acknowledges the importance of Schedule III on time - frame for planning and Implementation [See Rule 13] in the *C & D Waste Management Rules 2016 notified by MoEF&CC vide G.S.R. no. 317(E) dated 29th March, 2016*
- ii. Cities with population > one million : MoUD vide its circular dated 28th June, 2012 states all states to set up C & D waste recycling facilities in all cities with population of over 1 million.
- iii. Direction to Bulk generators : The agencies that generate C & D waste in bulk quantity to deliver the C & D debris at the recycling plant
- iv. Concession to bulk generators : The terms and conditions with the concessionaire and the fee levied on bulk producer of C & D waste are made available at a price at least 20% lower than corresponding materials from natural resources.
- v. Criteria for setting up C & D waste processing facilities : The Civic bodies wherein current waste generation > than 2000 TPD, to set up more than one plant for recycling of C & D waste.
- vi. Cities of population < one million : Sensitization and facilitation for re-use and recycling of C & D waste may also be taken up in cities of population less than 1 million to encourage such initiative.

- vii. Non-bulk generators : Collection points be provided so that small quantity generator of C & D waste is not required to transport the debris to a distance more than 2.5 to 3.0 km.
- viii. C & D Collection centers : to be notified wherein small quantity generators of C & D waste can deliver the C & D debris. The system and arrangements for collection and supply of C & D waste to recycling plants may be worked out and defined in an unambiguous manner.
- ix. Mandate use of C & D waste products :
 - a. Mandate use of C & D waste products: As and when C & D waste recycling plant is commissioned at a city, it may be made mandatory for all construction activities to use a specified percentage of building construction materials manufactured from recycled debris.
 - b. Incentivize utilization of recycled C & D waste products: (i) All Government constructions may be mandated to use at least 20 per cent of recycled C & D waste products. (ii) All renovation projects involving demolition, even in private sector, may be mandated to use at least 20 per cent of recycled C & D waste products. (iii) The tipping fee for delivery of C & D waste to the recycling plant, terms & conditions of civic body with the concessionaire may be designed to keep the price of C & D waste recycled products about 20 per cent lower than the corresponding conventional products.
- x. Guidelines also proposes MANAGEMENT PLAN and MARKETING PLAN.
- xi. Annexure-I of BMTPC Guidelines : provides copy of Construction and Demolition Waste Management Rules, 2016, Gazette of India, Part-II, Section-3, Sub-section (ii)], Ministry of Environment, Forest and Climate Change.

2. GUIDELINES *w.r.t.* Building Sector - Central Public Works Department (CPWD)

CPWD's Guidelines for Sustainable Habitat (March, 2014): The Guidelines are based on reports of National Mission on Sustainable Habitat by Ministry of Urban Development (MoUD) and draft code on "*Approach to Sustainability*" as part of National Building Code (NBC 2005).

The above CPWD Guidelines have FOUR parts:

- a. Guidelines on Architectural Design and Layout.
- b. CPWD Sustainability index and Guidelines for materials.

- c. Guidelines for selection of equipment for Electrical and Mechanical Services for sustainable buildings.

d. PART IV : Guidelines on reuse and recycling of Construction and Demolition (C & D) Waste

(Ref. http://cpwd.gov.in/Publication/Guideleines_Sustainable_Habitat.pdf)

3. GUIDELINES *w.r.t.* ROAD Sector

Under the Construction and Demolition (C & D) Waste Management Rules, 2016 Rule (11) under Duties of Indian Roads Congress (**IRC**) ‘The role of Indian Road Congress shall be specific to the standards and practices pertaining to construction of roads.’

As per literature surveys the urban waste that has been used significantly in road construction are ‘plastic wastes’. There is scant documentation regarding ‘authorised’ utilization of construction and demolition (C & D) waste in ROAD works, though it is being used in filling low lying areas.

Case studies :

Construction of Rural Roads using C & D Waste Materials in Thanjavur, TN : Project includes addition of C & D waste in the sub-base layer of the road structure, the conventional laterite layer can be further strengthened – the quantity of utilization of laterite is reduced and thus leads to cost reduction in road laying (rural roads).

4. Need for inclusion of abatement of adverse environmental impacts in C & D waste management GUIDELINES

An overview of the available Guidelines on construction and demolition (C & D) waste:

- i. The Building Materials and Technology Promotion Council (BMTPC) in 2016 released “**Guidelines for utilization of C & D waste in construction of dwelling units and related infrastructure in housing schemes of the Government**”. The construction and demolition (C & D) waste guidelines pertain to building industry.
- ii. The Central Public Works Department (CPWD), the PART IV: **Guidelines on reuse and recycling of construction and demolition (C & D) waste** is available in CPWD’s Guidelines for Sustainable Habitat (March 2014) – also address the building sector.

- iii. Road sector: There is not much documentation regarding 'authorised utilisation' of construction and demolition (C & D) waste in ROAD works, though it is being used in road works.
- iv. The 1st initiative by an ULB to address C & D wastes was done in September 2005, the Municipal Corporation of Greater Mumbai issued the Demolition and De-silting Waste (Management and Disposal) Guidelines.
- v. GUIDELINES on **Environmental Management** of C & D wastes :
'The waste generation from construction should not only be minimized, but should also minimize the hazardous effect from the generated wastes'.
(Source : CPWD Guidelines on C & D wastes)

CPCB '**Guidelines on Environmental Management of C & D Wastes**' in compliance of Rule 10 sub-rule 1(a) of the C & D Waste Management Rules, 2016 and has attempted to address the issues pertaining to abatement of adverse environmental impacts arising from C & D waste management activities. These issues were not discussed in the Guidelines prepared by CPWD & BMTPC.



Figure 5.1: Loss of C & D wastes - can be processed for reuse / recycle

SECTION VI
Introduction to Guidelines on
Environmental Management of C & D Wastes

1. Environmental degradation due to indiscriminate disposal of C & D wastes in cities

As per C & D Waste Rules (Rule 4 sub-rule (4)) there *should be no littering or deposition of construction and demolition waste so as to prevent obstruction to the traffic or the public or drains*. Instances of environmental degradation caused in cities due to indiscriminate disposal of C & D waste are listed below:

- i. Indiscriminate dumping of C & D wastes is a visually annoying and conveys poor enforcement of C & D waste in a city.
- ii. Due to lack of options for dumping in designated sites, low lying areas or abandoned quarries, vacant plots or sometimes even the outskirts of the city often become targets for dumping debris from the construction and demolition (C & D) of a city.
- iii. Often C & D is dumped on roadsides quietly by C & D waste generators.
- iv. Private contractors remove waste to privately owned, low-lying land for a price, or more commonly, dump it in an un-authorized manner along roads or other public land.
- v. C & D debris is being indiscriminately disposed along river banks or dumped in drains (nallahs) which hamper flow thereby encourage mosquitoes breeding due stagnant sewage / water or cause floods.
- vi. Cases often reported are C & D wastes are used to illegally fill up water bodies and wetlands around urban centres for 'creating land' for real estate development.
- vii. As C & D waste forms a part of solid waste gets disposed in landfills, as this is the cheapest option of disposal of C & D waste.
- viii. C & D waste from individual households finds its way into nearby municipal bins and waste storage depots making the municipal waste heavy, thereby affecting efficiencies of waste management treatment options ex. composting or energy recovery.

2. Need for environmental management of pollutants highlighted under C & D Waste Management Rules

In the Construction and Demolition Waste Management Rules, 2016 under **Schedule I** *Criteria for Site Selection for Storage and Processing or Recycling Facilities for construction and demolition waste* [See Rule 7(1)] in the Table 6.1 the following environmental conditions have been listed:

Table 6.1: Environmental conditions for C & D waste processing facility

Sl. as per Schedule I	Recommendation on environmental issues
(7)	Processing or recycling site shall be fenced or hedged and provided with proper gate to monitor incoming vehicles or other modes of transportation.
(8)	The approach and or internal roads shall be concreted or paved so as to avoid generation of dust particles due to vehicular movement and shall be so designed to ensure free movement of vehicles and other machinery.
(9)	Provisions of weigh bridge to measure quantity of waste brought at landfill site, fire protection equipment and other facilities as may be required shall be provided.
(10)	Utilities such as drinking water and sanitary facilities (preferably washing/bathing facilities for workers) and lighting arrangements for easy landfill operations during night hours shall be provided and Safety provisions including health inspections of workers at landfill sites shall be carried out made.
(11)	In order to prevent pollution from processing or recycling operations, the following provisions shall be made, namely: <ul style="list-style-type: none"> (a) Provision of storm water drains to prevent stagnation of surface water; (b) Provision of paved or concreted surface in selected areas in the processing or recycling facility for <u>minimizing DUST</u> and damage to the site. (c) <u>Prevention of NOISE pollution</u> from processing and recycling plant: (d) provision for treatment of effluent if any, to meet the discharge norms as per Environment (Protection) Rules, 1986.
(12)	Work Zone air quality at the Processing or Recycling site and ambient air quality at the vicinity shall be monitored.
(13)	The measurement of ambient noise shall be done at the interface of the facility with the surrounding area, i.e., at plant boundary.

As per C & D Waste Rules (Rule 4 sub-rule (4)), there should be no littering or deposition of construction and demolition waste so as to prevent obstruction to the traffic or the public or drains.

Under the C & D waste Rules 2016 '*Exemption from the compliance of norms (Schedule I (14))*', there are exemptions from the norms of pollution from **dust and noise**:

From the above it can be noted that C & D waste management / activities are dusty. The key pollutants that impact environment are **DUST & NOISE** besides other issues.

3. Effective C & D Waste Management – Opportunities for resource conservation & employment generation

Some key benefits of efficient recycling and reusing of C & D waste are listed below:

- i. Reduces the pressure for utilization of new construction materials / need for further mining operations. Mining activity if not properly monitored degrades the environment
- ii. Reduction of demand for energy and water in manufacture of building materials from mined / natural resources (thereby reducing environmental impacts arising from mining, manufacturing and transportation)
- iii. Reduces quantum of transportation and disposal of C & D wastes to be handled when on-site reuse / recycle is encouraged.
- iv. Proper segregation of C & D waste avoids mixing with bio-degradable waste destined for MSW treatment facilities / landfills.
- v. Promotes options for reuse / recycle of products manufactured from C & D waste.
- vi. Roadsides and vacant plots could be freed from debris dumps thereby giving cities a better facelift.
- vii. Creates employment generation and market :
C & D waste management activities (segregation, reuse & recycling being labour intensive activities, generate employment opportunities. The manufacturing & sale of recycled products creates a market this further opens further job opportunities.

4. Major operations in C & D processing plant

Major operations in a recycling plant are sorting, crushing, classification/sieving and washing. Sorting can either be done manually or using advanced devices. Before feeding the material into the crusher, a grizzly can be used to ensure the maximum feeding size of debris for the respective crusher. Generally, jaw crushers or horizontal impact crushers are used to crush the debris. Size classification is performed using appropriate screens of required sizes. Washing is done to separate fine particles (silt and clay particles) and this operation can be done combined with size classification. Sorted aggregates of specific sizes are stored separately. Noise is generated from equipment, though operations generate both noise & dust (Content taken from : Ref. Study by IIT Madras on C & D waste Management for Chennai).

5. Overview of Construction & Demolition activities

Table 6.2: An overview of Construction & Demolition activities

Features	Construction activity	Demolition activity	Remarks
Activity awarded by	Mainly by : Development Authority / Housing Board / Slum Clearance Board / Private company		All factors depend on the size of the project
Activity executed by	Mainly outsourced to private contractors. Most local bodies have empanelled contractors for executing demolition activities.		
Key activity	Preparation of : concrete mixture (RMC) and concrete slabs	Removable of recyclable components done mostly manually Activity mostly mechanized to save time & reduce manual intervention	Mechanization of activities is being employed for expediency & reduce manual intervention /
Nature of activity	Manual & mechanized	Manual & mechanized	
Quantum of waste generation per sqm	Low	Very high	
Fees / Rates for lifting wastes	<u>Demolition</u> : Rates for lifting demolition waste are fixed per cub.m or cubic feet by the concerned department after assessing the salvageable wastes ;		Main Pollutants : NOISE & DUST generation
Common equipment deployed at site	Movement of construction material – RMC, bricks, slabs , metal frames by pulley system or cranes	concrete breaker machines , JCBs, earth movers, pneumatic breakers	
Wastes that can be salvaged (Re-usable / Recyclable wastes	<u>Construction</u> : Wastes also include surplus and damaged products and materials arising in the course of construction work or used temporarily during the course of on-site activities. <u>Demolition</u> : Refer Annexure II		

6. GUIDELINES on Environmental Management of C & D Waste Management in India

The four common environmental impacts from an activity that may affect its surroundings are:

- (a) Dust
- (b) Noise
- (c) Smoke
- (d) Odour (fugitive emission)

In case of C & D waste management, the key parameters which impact environment are **DUST & NOISE**.

The draft “*Guidelines on Environmental Management of C & D Waste Management in India (2017)*” has been prepared by CPCB in compliance of under *Duties of the Central Pollution Control Board under Rule 10 sub-rule 1(a)* of Construction and Demolition (C & D) Waste Management Rules, 2016 states ‘prepare operational_GUIDELINES related to environmental management of construction and demolition waste management’. Part II is in compliance of the above-mentioned rule.

CPCB constituted an expert Committee to advise it on matters pertaining to Implementation of C & D Waste Management Rules, 2016, the first task addressed by the Committee to guide in preparation of the abovementioned Guidelines.



Figure 6.1:
Indiscriminate dumping of C & D waste results in choking drains

SECTION VII

Guidelines on Environmental Management of C & D Wastes – Noise Management

1. Public complaints on NOISE generation

- a. Construction & demolition activities often generate noise / vibration which lead to complaints from the public despite the limited time frame over which it takes place. Complaints typically arise when the community has no clear understanding of the extent or duration of the activities. The above underscores the need for identification and assessment of noise generating activities. A timely assessment can aid operators / contractors to change the schedule of activities to reduce noise before the construction / demolition activities and during the process.
- b. Unacceptable noise is a nuisance and activities associated in C & D waste processing activity are associated with perceptible noise increases.
- c. Noise from a C & D waste management facility is considered an environmental nuisance if the construction / demolition activity is conducted outside the stipulated hours of operation or on holidays.
- d. Some health problems caused due to excessive exposure to undesirable noise levels include :
 - i. Sleep problems, insomnia & fatigue.
 - ii. Fall in speech communication, disturbance and diminished concentration thus adversely affecting job performance efficiency.
 - iii. Psychological disturbance including impaired hearing.

2. Restrictions on noise from construction equipment - Noise Pollution (Regulation and Control) Rules, 2000

- i. The above Rules highlights various sources of noise that impact ambient noise levels in public places ex. industrial activity, construction activity, fire crackers, sound producing instruments, generator sets, loud speakers, public address systems, music systems, vehicular horns and other mechanical devices.
- ii. *An area comprising not less than 100 metres around hospitals, educational institutions and courts may be declared as silence area / zone for the purpose of these rules (Rule 3(5)).*

- iii. Rule 5A (3), Rule 7(1) and Rule 8 (1) (a) (ii) provides restrictions on noise from construction equipment.

3. Guidelines for NOISE mitigation in C & D operations

Key noise generating sources in C & D waste management activities are:

- a. Machinery deployed in construction / demolition activities
- b. Operation of Gensets (Noisy)
- c. Vehicle movement

a. Noise abatement - Machinery deployed in construction / demolition activities

The guidelines to reduce noise levels:

- i. Define Construction / demolition periods / time / duration:
Construction / demolition activities are restricted as per Noise (Regulation & Control) Rules 2000: Daytime: 6 am to 10 pm;
- ii. Days operations are permissible : Days of the week propose - Monday to Saturday. Permissible days of operation to be determined as per feasibility by concerned department of the State Govt.
- iii. Night ban: No C & D activity shall be undertaken within the premise.
Rule 5A under Noise (Regulation & Control) Rules 2000 : Restrictions on the use of horns, sound emitting construction equipments and bursting of fire crackers:- sub rule (3) Sound emitting construction equipments shall not be used or operated during night time in residential areas and silence zones.
- iv. Define permissible noise levels under Noise (Regulation & Control) Rules 2000 at the boundary of the facility / operations: The ambient air quality standards in respect of noise for different areas / zones are specified in the Schedule to the rules. The State Government shall categorize the areas into industrial, commercial, residential or silence areas / zones for the purpose of implementation of noise standards for different areas. All development authorities, local bodies and other concerned authorities while planning developmental activity or carrying out functions relating to town and country planning shall take into consideration all aspects of noise pollution as a parameter of quality of life to avoid noise menace and to achieve the objective of maintaining the ambient air quality standards in respect of noise. The noise levels in

any area / zone shall not exceed the ambient air quality standards in respect of noise as specified in the Schedule.

The ambient noise levels as per CPCB's noise monitoring in many cities have exceeded the area zone norms due to 'mixed' land-use (non-compatible landuse), rapid urbanisation, increased vehicular movement due to which there is significant background noise. As C & D waste management requires deployment of heavy machinery there will be significant noise generation. As C & D waste management (includes recycling) demonstrates nature of 'industrial' activity, the concerned authority may stipulate noise limits in the range applicable to industry area zone under the Noise (Regulation & Control) Rules, 2000.

SCHEDULE

(See rule 3(1) and 4(1))

**Table 7.1: Ambient Air Quality Standards in respect of Noise
Noise (Regulation & Control) Rules 2000**

Area Code and Category of Area / Zone	Day Time Limits in dB(A) Leq*
(A) Industrial area	75
(B) Commercial area	65
(C) Residential area	55
The above measurements are measured as LAeq which is the equivalent continuous (energy average) level (A-weighted).	

b. Noise abatement - Genset noise

Refer CPCB weblink on Genset standards: <http://cpcb.nic.in/Generator.php>

c. Noise abatement - due to vehicle movement

Due to vehicular traffic and material transportation within applied area. Abatement due to transport activities arising due to vehicles movement (operation of vehicles within, entering or leaving the site):

- i. Regular checking and maintenance of vehicles should be ensured

- ii. For long distance transportation overhaul routes to be judiciously selected
- iii. No parking outside the plant premise
- iv. Earmarked areas for parking vehicles within premise
- v. Smooth movement of incoming & out going vehicles / trucks
- vi. Roads within premise tarred
- vii. Minimum use of horns
- viii. Operational Weigh bridge

d. Noise abatement measures - Other areas

There will be noise due to heavy earth moving machinery / crushing etc – depends to the extent of mechanization & machinery being deployed. Machinery deployed in construction / demolition activities:

The dominant source of noise from most construction equipment is the engine (usually diesel based) without sufficient muffling (acoustic provision).

- i. Noise control: To control the noise regular preventative maintenance of equipment to be carried out. regular and proper maintenance of noise generating machineries to avoid noise increase.
- ii. Periodical monitoring of noise will be done to adopt corrective actions wherever needed.
- iii. Ear plugs to be made available to workers during the operational hours.
- iv. Besides the operators prepare Noise Mitigation Plan (NMP) which addresses: management and mitigation strategies to prevent an environmental nuisance caused by construction / demolition / recycling activities impacting ambient noise levels.
- v. Besides operators prepare Noise Mitigation Plan (NMP) which addresses: management and mitigation strategies to prevent an environmental nuisance caused by construction / demolition / recycling activities impacting ambient noise levels.
- vi. Other initiatives include
 - Maintain records of equipment / machinery maintenance
 - Maintain records of monitored noise levels
 - maintain records of complaints on noise
 - Comply with Consent conditions issued by State Pollution Control Boards / PCCs and concerned authority

- vii. Plantation activities: Plantation reduces propagation of dust and noise.



Figure 7.1: Dumping of C & D wastes clogs drains in cities

SECTION VIII

Guidelines on Environmental Management of C & D Wastes – Dust Management

1. DUST – environmental pollutant in C & D waste operations

The importance of controlling dust / fine particles from construction and demolition activities are:

- a. Dust emissions arising from C & D activities are an environmental nuisance both within the site and beyond the plant site / boundary.
- b. Dusts from various C & D activities release wide range of particle sizes and material types and can cause both serious health problems ranging from eye irritation, nose, mouth and respiratory system.

The larger heavier particles settle out of the air quickly and are hazard to the operators of plant and equipment and those in the immediate vicinity. The smaller particles (usually invisible) are transported further in the air and can cause health hazards beyond plant premise (several kms away).

2. Guidelines for DUST mitigation in C & D operations

C & D debris management / processing activities are dusty, major dust generating sources are:

- i. Loading & unloading activities: wastes & processed C & D products
- ii. Incoming / outgoing vehicles
- iii. due to machinery used in handling C & D waste operations

a. Dust abatement - Dust from loading / unloading operations

- i. Areas to be earmarked for delivery / deposition of C & D wastes
- ii. A sheet cover over the debris : over designated transport vehicles at waste processing sites
- iii. Sign boards to be displayed indicating do's & don'ts
- iv. Dust (fugitive emissions suppression systems in place) : Water sprinklers to be sprayed at all unloading points.
- v. For containing fugitive emissions (dust) also refer CPCB's report :
Inventorization of Railway Sidings and Guidelines for their Environment Management (regarding loading / unloading activities)

Weblink:

http://cpcb.nic.in/upload/NewItems/NewItem_216_Report_Invent_RailwaySidings.pdf

b. Dust abatement - due to vehicle movement

Transport movement:

Dust abatement due to transport activities arising due to vehicles movement (operation of vehicles within, entering or leaving the site) can also include the following:

- i. Monitor movement of vehicles (incoming / outgoing) carrying C & D wastes or processed C & D waste products only
- ii. Transportation of C & D wastes should be done in covered vehicles to prevent fugitive dust emission.
- iii. Regular checking and maintenance of vehicles should be ensured (valid PUC)
- iv. For long distance, transportation routes of C & D wastes to be selected after discussion with local authorities
- v. Earmark areas for parking vehicles
- vi. Smooth movement of incoming & out going vehicles / trucks
- vii. Roads within premise tarred
- viii. Weigh bridge (to be operational)
- ix. Dust suppression systems in place (fugitive emissions): Dust from roads , regular water sprinkling on haul road will suppress the dust.

c. Dust abatement – due to machinery used in C & D operations

The C & D operations include: crushing / hammering etc from machineries deployed at site causing dust emissions from process equipment. Use of water sprinklers is a good practice to suppress dust emission, similar practice is adopted in stone crushing operations (refer Environmental Protection Rules 1986, Schedule I Standards for emissions & discharge of environmental pollutants Sl#31 Stone crushers.)

d. Compliance of National Ambient Air Quality Standards (NAAQS)

Vide Notification dated 18th November, 2009 the National Ambient Air Quality Standards (NAAQS) were revised, the standards w.r.t. particulate matter need to be complied with at the outer boundary of the facility.

3. Other dust abatement measures and safety issues

i. Water requirement

- a. Water will be required for dust suppression, for plantation and for drinking & domestic purpose.
- b. No fresh water requirement shall be for dust suppression

ii. Use of 'treated waste water' (preferably) in sprinklers for dust suppression

- a. As ambient air quality standards need to be complied, any manmade intervention (like dust generating activities in C & D waste management) need adopt necessary dust suppression measures ex. Use of water sprinklers using treated waste water (controlling the dust particles in the air is as important as minimizing water usage) . Site operators need to demonstrate both (a) control of 'visible' dust in particular besides (b) fine dust from activities within their premises.
- b. Treated waste water (sprinklers) to be used for washings / unloading areas / roads to suppress dust
- c. Import wherever feasible treated waste water from other STPs for dust suppression / sprinklers

iii. Waste water management

- a. Adopt ZERO effluent discharge system
- b. All wash down of vehicles and equipment to be done in designated areas and wash water be treated for reuse within plant for suppression of dust.

iv. Residual waste disposal

Solid waste generation / management in C & D waste operations - residues (C & D waste processing facility) to be sent to nearest landfill in consultation with concerned authorities

v. Diesel use

Diesel use in equipment / gensets / vehicle movement generate emissions : Necessary pollution control measures to be adopted to reduce emissions

vi. Plantation / greenery (use of local species / plants with low water uptake)

- a. Grow trees at the periphery - The plantation minimizes propagation of noise and also arrests dust

- b. To add to aesthetics within plant : maintain water fountains , water bodies , landscaped areas wherever possible
 - c. plantation helps to reduce fugitive of emission and noise control
- Under **Schedule I** Criteria for Site Selection for Storage and Processing or Recycling Facilities for construction and demolition Waste [See Rule 7(1)] : Sl#15 : A vegetative boundary shall be made around processing or recycling plant or site to strengthen the buffer zone.
- vii. Emergency facilities** : Equipment & Facilities: • Mobiles • Fire fighting equipment's • Emergency medical assistance
 - viii. Protective gear** i.e. for dust and noise , goggles, helmet, face shield, hand gloves. First aid facilities to be in place
 - ix. Training / Awareness program** : Training at all levels to staff on the following:
 - a. Knowledge of machineries being used • Procedure for reporting emergencies • location and use of fire fighting equipment • knowledge of alarm system • Training in first aid
 - b. Environmental head to be aware of need for proper maintenance and operation of equipment / machineries etc and conduct environmental awareness / safety program to the workers, supervisory staff and contract workers periodically



Figure 8.1: Continuous dumping of C & D wastes encroach on city ponds / lakes

Table 8.1: National Ambient Air Quality Standards (NAAQS) –
[NAAQS Notification dated 18th November, 2009]

S. No	Pollutants	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
			Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (notified by Central Government)	
1	Sulphur Dioxide (SO ₂), µg/m ³	Annual*	50	20	1. Improved West and Gaeke 2. Ultraviolet Fluorescence
		24 Hours**	80	80	
2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual*	40	30	1. Modified Jacob & Hochheiser (Na-Arsenite) 2. Chemiluminescence
		24 Hours**	80	80	
3	Particulate Matter (Size <10µm) or PM ₁₀ µg/m ³	Annual*	60	60	1. Gravimetric 2. TOEM 3. Beta attenuation
		24 Hours**	100	100	
4	Particulate Matter (Size <2.5 µm) or PM _{2.5} µg/m ³	Annual*	40	40	1. Gravimetric 2. TOEM 3. Beta attenuation
		24 Hours**	60	60	
5	Ozone (O ₃), µg/m ³	8 hours**	100	100	1. UV photometric 2. Chemi-luminescence 3. Chemical Method
		1 hours**	180	180	
6	Lead (Pb), µg/m ³	Annual*	0.50	0.50	1. AAS/ICP Method after sampling using EPM 2000 or equivalent filter paper 2. ED-XRF using Teflon filter
		24 Hour**	1.0	1.0	
7	Carbon Monoxide (CO), mg/m ³	8 Hours**	02	02	Non dispersive Infra Red (NDIR) Spectroscopy
		1 Hour**	04	04	
8	Ammonia (NH ₃), µg/m ³	Annual*	100	100	1. Chemi-luminescence 2. Indophenol blue method
		24 Hour**	400	400	
9	Benzene (C ₆ H ₆), µg/m ³	Annual*	05	05	1. Gas chromatography based continuous analyzer 2. Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP)-particulate phase only, ng/m ³	Annual*	01	01	Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m ³	Annual*	06	06	AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m ³	Annual*	20	20	AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform interval.

** 24 hourly 08 hourly or 01 hourly monitored values, as applicable shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

NOTE: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

SECTION IX

Guidelines on Environmental Management of C & D Wastes – Other Issues

1. Importance of processing C & D Wastes - Centralized Vs De-centralized

- a. SOLID WASTE (SW) RULES, 2016
 - i. Under SOLID WASTE (SW) RULES 2016, Rule 3 subrule 35. (Rule 3) "**processing**" of waste means *any scientific process by which situ solid waste is handled for the purpose of reuse, recycling or transformation into new products;*
 - ii. Recognizing the major constraint in identifying land in cities for 'centralized' waste processing the **SW Rules 2016** has defined 'de-centralized' processing of solid wastes, under Rule 3 subrule 15. "**Decentralized processing**" means *establishment of dispersed facilities for maximizing the processing of biodegradable waste and recovery of recyclables closest to the **source** of generation so as to minimize transportation of waste for processing or disposal.*
- b. Application of Centralized Vs De-centralized processing of C & D wastes
The above application is also being adopted in C & D waste recycling as given below:
Non-bulk generators : *Collection points be provided so that small quantity generator of C & D waste is not required to transport the debris to a distance more than 2.5 to 3.0 km (Source : BMTPC Guidelines)*
- c. To address utilization of C & D wastes the Central Public Works Department (CPWD) and National Building Construction Company (NBCC) to use recycled portions of C & D wastes in their construction activities (on-site use) or if the same is available within 100 km from construction site. (Ref. Vide MoUD Circular dated 23.03.2016 directing State Works Dept to issue directions on use of C & D wastes as it is mandatory for use in CPWD & NBCC works)
- d. Decentralized of C & D waste may be inferred as 'on-site' Management of C & D wastes while centralized refers to the existing 'stand alone' C & D waste processing facility ex. facility of IL&FS in Burari, North Delhi.

2. Options in C & D waste management - Centralized Vs De-centralized processing / recycling facilities

As major components of Construction and Demolition (C & D) Wastes have the potential to be reused or recycled most of the city ULBs are gearing to set up integrated facilities of Construction and Demolition (C & D) waste collection and recycling facilities. Profitable use of recycled C & D waste minimizes the cost of managing such waste and requirement for valuable landfill space, besides giving employment opportunities to unemployed youth. It will also save on mining of natural resources and reduce transportation costs.

Three general ways to reuse C & D waste material in a building:

- a) reuse the structure (corresponding to renovation and design for adaptability)
- b) reuse the elements (corresponding to re-development) and
- c) recycle the material (corresponding to re-processing or re-cycling)

The three possible options that can be explored in C & D waste recycling (AIT study - 2008)

- a) Mobile C & D waste recycling
- b) Semi-Mobile C & D waste recycling
- c) Stationary plant C & D waste recycling

A brief of the three options are given below:

- a. In the **Mobile** C & D waste recycling plant (in-situ facility – example of de-centralized operations) , the material is crushed and screened and ferrous impurities are separated through magnetic separation. The plant is transported to the demolition site itself and is suited to process only non-contaminated concrete or masonry waste.
- b. In the **semi-mobile** C & D waste recycling plant (example of de-centralized operations) , removal of contaminants is carried out manually and the end product is also screened. Magnetic separation for removal of ferrous material is carried out. End product quality is better than that of a Mobile unit. These plants are not capable to process a of mixed demolition waste containing matter like metal, wood, plastic, etc.
- c. **Stationary C & D waste recycling plant plants** (example of centralized operations) are equipped for carrying out crushing, screening as well as purification to separate the contaminants ex. the 1st C & D waste processing facility commissioned in Delhi in Burari and operated by IL&FS.

Options a & b options (example of de-centralized operations) are often found to be practical for on-site operations as LAND availability and transportation in cities are MAJOR constraints besides public resistance to establishing C & D waste processing facilities (stationary or centralized C & D waste recycling facility).

3. Guidelines on Setback distances (or buffer zone distance)

In view of the above discussion on the application of Centralized Vs De-centralized processing of C & D wastes there needs to be a practical approach in applying setback distances. The purpose of a buffer zone is to minimize the potential environmental impacts from the operation of a construction and demolition debris management & disposal activities. The Table 9.1 summarizes conditions under TWO waste rules - regarding 'buffer zone distance' and the importance of assessment on a case to case basis as the sites are regional specific

- a. Construction & Demolition (C & D) Waste Management Rules, 2016
- b. Solid Waste (MSW matter) Management Rules, 2016

Table 9.1: Buffer area provisions under TWO Waste Management Rules

Under C & D Waste Management Rules, 2016	Under Solid Waste (MSW matter) Management Rules, 2016
<p>(a) Under Schedule I Criteria for Site Selection for Storage and Processing or Recycling Facilities for construction and demolition Waste [See Rule 7(1)]</p> <ul style="list-style-type: none"> • Sl(6) A buffer zone of no development shall be maintained around solid waste processing and disposal facility, exceeding 20 tons or more in one day or 300 tons per project in a month of installed capacity. This will be maintained within the total area of the C & D waste processing. <i>The buffer zone shall be prescribed on case to case basis by the local authority in consultation with concerned State Pollution Control Board.</i> • Sl (14) The following projects shall be <u>exempted</u> from the norms of pollution from dust and noise as mentioned above: (a) For construction work, where <u>at least 80 percent</u> construction and demolition waste is recycled or reused <u>in-situ</u> and (b) sufficient buffer area is available to protect the surrounding habitation from any adverse impact. • (15) A vegetative boundary shall be made around Processing or Recycling plant or site to strengthen the buffer zone. 	<p>(a) Rule 3 <u>Definitions</u> , Sub-rule 7 : “buffer zone” means zone of no development to be maintained around solid waste processing and disposal facility, exceeding 5 TPD of installed capacity. This will be maintained within total and area allotted for the solid waste processing and disposal facility.</p> <p>(b) Rule 11. <u>Duties of the Secretary-in-charge, Urban Development in the States and Union territories.-</u></p> <ul style="list-style-type: none"> • Sub rule (j) facilitate establishment of <u>common</u> regional sanitary land fill for a group of cities and towns falling within a distance of <u>50 km (or more)</u> from the regional facility on a cost sharing basis and ensure professional management of such sanitary landfills; a. Sub rule (l) <u>notify buffer zone</u> for the solid waste processing and disposal facilities of <u>more than five tons per day</u> in consultation with the State Pollution Control Board; and <p>(c) Rule 14. <u>Duties of Central Pollution Control Board.-</u>The Central Pollution Control Board shall sub-rule (h) publish guidelines for maintaining buffer zone restricting any residential, commercial or any other construction activity from the outer boundary of the waste processing and disposal facilities for different sizes of facilities handling <u>more than five tons per day</u> of solid waste;</p> <p>(d) Under SCHEDULE I [see rule 15 (w),(zi), 16 (1) (b) (e), 16 (4)] Specifications for Sanitary Landfills (A) Criteria for site selection.-</p> <p>Sl (ix) A buffer zone of no development shall be maintained around solid waste processing and disposal facility, exceeding <u>five Tonnes per day</u> of installed capacity. This will be maintained within the total area of the solid waste processing and disposal facility. The buffer zone shall be prescribed on case to case basis by the local body in consultation with concerned State Pollution Control Board.</p>

Buffer zone area around C & D waste processing facility:

- a. The Environmental Protection Authority (EPA) guidance recommends separation distances between industrial activities and sensitive land uses. These buffers aim to protect sensitive land uses from unacceptable impacts on health and amenity that may result from industrial activities, emissions and infrastructure. The document, titled **Guidance for the Assessment of Environmental Factors, Separation Distances between Industrial and Sensitive Land Uses**, No. 3, EPA, June 2005 (web link http://www.epa.wa.gov.au/docs/1840_GS3.pdf) recommends a separation distance of **1000m** between premises that crush or screen C & D waste. *It is important to note that the separation distance is not intended to represent an absolute separation distance and does not replace the need to demonstrate best practice in the prevention and minimization of emissions at prescribed premises. It is however, a useful tool to factor into impact assessments.*
- b. It is widely recognized due to rapid urbanization maintaining 1000m separation distance due to mixed land-uses (non-compatible landuse) is a major challenge for establishing C & D waste processing facility. Siting needs to ensure that both , the demand of the recycled products and processing C&D wastes sustainable and economically viable.
- c. Separation distances are necessary in order to minimize potential environmental conflicts between non-compatible land uses particularly due to rapid urbanization witnessed across the cities wherein the number of cities entering the million plus population bracket is on a steady rise in our country. Besides adopting noise and dust control abatement measures , the following distance restrictions be considered w.r.t. setback distances from the outer boundary of the such C & D facilities wherein it not be located within the following receptor setback distances:
 - i. 200 metres from any Industrial/Commercial land use property /
 - ii. 100 m from bank or high water mark of any watercourse or wetland / pond / lake
 - iii. 150 metres of the right-of-way boundary of a public highway;
 - iv. 50 metres from any other adjacent property;
 - v. The Coastal Regulation Zone (CRZ) notified under the Gazette of India, Extraordinary, Part-II, Section 3, Sub-section (ii) of dated the 6th January, 2011) COASTAL REGULATION ZONE Notification Ministry of

Environment & Forests (Department of Environment, Forests and Wildlife). Prohibited activities under the CRZ Notification are include – *‘Dumping of city or town wastes including construction debris, industrial solid wastes, fly ash for the purpose of land filling and the like and the concerned authority shall implement schemes for phasing out any existing practice, if any, shall be phased out within a period of one year from date of commencement of this notification.’*

- vi. Location of sites within the flood plains - Due rapid urbanisation across the country in the last two decades , the relevant data of past 50 years may be used to justify establishing a C & D waste processing site
- vii. Any **other Notifications** under Central/ State Governments;
 - Notified Areas- Reserved Forests, Nature Protection, Sanctuary, Wild life Sanctuary, Eco-sensitive zones, Historical Monuments, places of tourist interest, etc.
 - State Policy / Plan
 - Master Plan of Development Authorities

Under the C & D waste management rules the threshold processing facility has been defined as ‘exceeding 20 tons or more in one day or 300 tons per project in a Month of installed capacity’ – (bulk C & D waste generator). As impacts are location specific , the above setback distances may be revised by the concerned local authority in consultation with SPCBs / PCCs.

Under **Schedule I** of the Rules Criteria for Site Selection for Storage and Processing or Recycling Facilities for construction and demolition Waste [See Rule 7(1)] at Sl#6 : The buffer zone shall be prescribed on case to case basis by the local authority in consultation with concerned State Pollution Control Board.

- d. Other environmental factors that be considered are :
 - i. Site within compatible land uses
 - ii. provide all weather access roads
 - iii. providing access to a year round suitable cover to the C & D waste material
 - iv. no water collection within premises during rains / washings

- v. providing controlled access to the site
- vi. providing a appropriate fencing and sign board outside at site (do's /don'ts)

4. Inspection of C & D waste load

C & D waste processing facility shall inspect each waste load before unloading debris and shall accept only C & D Debris - no industrial waste shall be accepted at the C & D facility unless otherwise approval received from concerned authority. No untreated industrial effluent / wastes are to be accepted at the facility.

5. C & D waste processing facility – ‘ORANGE’ category activity

Consent to establish under section 21 of Air (Prevention & Control of Pollution) Act 1981 and under section 25/26 of Water (Prevention & Control of Pollution) 1974 has been treated as an **ORANGE** category project by Delhi Pollution Control Committee (DPCC) under the Product / activity : Processing / recycling of construction & demolition waste debris (malba) to IL&FS, the operator that established the 1st C & D waste processing facility in Delhi. The categorization as ORANGE be considered by all SPCBs/PCCs to ensure harmonization when dealing with C & D processing activity. In Office Memorandum (OM) vide letter dated June 10, 2014 MoEF&CC on - Applicability of EIA 2006 Notification as amended from time to time for *standalone Construction & Demolition Waste processing facility* – the notification & CC mentions that this activity does not attract the provisions of the EIA 2006 Notification. However, the said activity will be governed by the consent mechanism under Air (Prevention & Control of Pollution) Act 1981 and under Water (Prevention & Control of Pollution) 1974.

6. GOOD PRACTICEs proposed: Constraints Vs opportunities in establishing C & D waste management facilities

Though city residents & NGOs have come forward to support waste management (ex. MSW) initiatives by ULBs however when it comes to identification of land / acquisition of land for WASTE MANAGEMENT, project proponents face severe public protests. A number of civic bodies in various cities have initiated the process of establishing C & D waste processing facilities in cities. Key requirements include appropriate site location, availability of necessary land , road infrastructure besides provision of weigh-

bridge , storage area etc. In most of the cities C & D wastes are being dumped haphazardly in low lying or sometimes reaching landfills.

Some constraints Vs opportunities in establishing C & D waste management facilities w.r.t. adopting and listed below:

a) C & D waste management facilities w.r.t. population :

Under C & D Waste management Rules 2016, Schedule III [See Rule 13] provides the Timeframe for Planning and Implementation of the rules based on population as follows :

- Cities with population of \geq one million
- Cities with population of 0.5 - 01 million
- Cities with population of $<$ 0.5 million

Ministry of Urban Development vide circular dated June 28, 2012, directed States to set-up such facilities in all cities with a population of over 10 lakh. (One million plus cities) to establish environment friendly C & D recycling facilities. Refer **ANNEXURE I** Initiatives C & D waste management in 69 cities.

b) Quantification of C & D waste generation / processing is Region - specific:

Local bodies need to ascertain the quantum of C & D waste generation and its potential utilization taking into account the existing development / infrastructure projects and proposed regional plans w.r.t. compatible landuses in consultation with SPCBs/PCCs also. Referral documents for assessment of quantum of C & D waste generated / processed and the necessary land requirement in a region can be studied in the following documents under the C & D Waste Management Rules, 2016:

- i. under [Rule (7)(2)] : The operator of the facility as specified shall apply in **Form I** for authorization from State Pollution Control Board or Pollution Control Committee.
- ii. under [Rule (8)(2)]: State Pollution Control Board or Pollution Control Committee shall grant 'authorization' to construction and demolition waste processing facility in **Form-III** as specified under these rules after examining the application received in **Form I**;
- iii. under [Rule (7)(3)] : The operator of the facility shall submit the annual report to the State Pollution Control Board in **Form II**.

- iv. under [Rule (8)(3)] : Annual Report to be submitted by the State Pollution Control Board / Committees in **Form – IV** to CPCB.
- c) Land acquisition :
 Generally LAND disposal is 1st resort in waste management - Land disposal of solid wastes has been the oldest practice. Disposal of wastes by landfilling or uncontrolled dumping of commingled (mixed) wastes has been observed in many cities. Under SOLID WASTE RULES, 2016 Rule #3 subrule definition #57 - **“waste hierarchy”** it mentions that *prevention of waste should be the most preferred option and the disposal at the landfill being the least.* However in general ‘land disposal’ is 1st resort in waste management in several cities. The ‘landfill’ as a facility / destination for urban wastes is being gradually revised since availability of suitable land in cities is a major challenge besides the awareness of recyclability ‘waste’ has been growing over the years. The ULBs are recognizing the importance of ‘integrated’ waste management i.e. processing cum disposal of wastes.
- d) Using closed / capped landfills in cities – Land availability option
 In cities where landfills have been capped and have complied with necessary closure conditions, the land can be leased for installation of C & D waste processing facility.
- e) Bulk generators
 Under the C & D Waste Rules w.r.t. quantum of waste generation addresses those sources generating more than **20 tonnes** or more in one day or **300 tonnes** per project in a month of installed capacity.
Criteria for setting up C & D waste processing facilities (BMTPC Guidelines) : The Civic bodies wherein current waste generation **> 2000 TPD**, to set up more than one plant for recycling of C & D waste.
- f) Non-bulk C & D waste generators
 The BMTPC Guidelines has suggested the following:
 i. Non-bulk generators: *Collection points be provided so that small quantity generator of C & D waste is not required to transport the debris to a distance more than 2.5 to 3.0 km*

- ii. C & D Collection Centers: *to be notified wherein small quantity generators of C & D waste can deliver the C & D debris. The system and arrangements for collection and supply of C & D waste to recycling plants may be worked out and defined in an unambiguous manner.*
As 'waste' generation is location / region specific the local bodies to identify sites for receiving / processing intermittent non-bulk C & D wastes.
- g) Practice waste minimization 1st & waste disposal to be last option
- i. Management of C & D waste should reflect the waste management hierarchy - waste prevention and minimization being the first priority succeeded by reuse and recycling. Waste prevention should be noted at all stages of project duration, waste disposal to be last option.
 - ii. Sorting and processing C & D waste at the source is a GOOD PRACTICE. The C & D waste may be segregated into following categories:
 - for structures for buildings
 - for use in road works
 - building parts that could be salvaged
 - iii. Another level of segregation can be done among materials such as plastic, cables, glass, wood and plaster board.
 - iv. Some strategies for use of recycled C & D wastes include
 - (a) To source the recycled concrete aggregates from sites being re-developed for use in the same site (on-site).
 - (b) For a given structure, only one type of manufactured coarse aggregate and one type of manufactured fine aggregate to be used.
 - v. Road projects : Utilization of bitumen and asphalt (C&D wastes) can be recycled in roads projects in consultation with concerned agencies.
 - vi. Besides cost savings, use of on-site crushers (mobile / semi mobile) to produce such aggregates can reduce the transportation impacts of a project associated with the removal of C & D waste from site and the transportation of quarried aggregates.
 - vii. During site clearance / re-modelling / renovation / re-development works, there are opportunities for beneficial re-use and re-cycling of the demolition materials. The subsequent use of recycled materials in

reconstruction works also reduces the quantities of waste which would need to be disposed in landfill sites.

- viii. Excavated spoil/topsoil can be carefully set aside and also be used creatively in the landscaping or for construction of embankments and screening / noise abatement berms in civil engineering projects.

h) Encourage C & D waste processing/ reuse

India's first plant (stationary) for recycling of C & D waste was commissioned during 2009 at 10 acre site at Burari, Jahangirpuri in North Delhi by Infrastructure Leasing & Financial Services (IL&FS) under an agreement with North Delhi Municipal Corporation. A 'fixed' recycling plant (centralized facility) requires higher volumes of demolition waste to justify high investment in complex, screening and separation systems, which are necessary to process mixed demolition waste. It has to be located in a place, where large volume of waste is easily transported and there is a market for recycled products.

Full advantage to be taken of all opportunities for the reuse of construction materials. Explore utilization of material generated for reuse on site or salvaged for subsequent reuse to the greatest extent possible, disposal should be considered as a last resort. Need to maximise the efficient use/reuse of materials. Encourage setting up C & D waste recycling facilities on-site. Operate mobile or semi mobile C & D waste processing plants, this will reduce volume of waste to be transported.

i) Hazardous wastes / toxic wastes streams

Hazardous wastes / toxic wastes streams should be kept separately from other wastes to avoid further contamination, their disposal to be done in consultation with SPCBs/PCCs under HW Management Rules 2016. Examples of C & D waste that are classified as hazardous include lead, tars, adhesives, sealants, asbestos. The concerned authorities shall examine the DEMOLITION PLAN submitted by the applicant to assess if there are any HW streams.

j) Market for utilization of C & D waste products

The capital investments involved in equipment and facilities required for recycling the materials is significant, unless the market for use recycled aggregate is developed, economic viability of C & D waste processing facilities would be a challenge.

k) Mandate utilization of C & D waste products in Govt & private projects

The building construction products manufactured from C & D wastes have been reported to satisfactorily meet necessary requirements of compressive strength and water absorption. The end products such as kerb stones, paving blocks of different shape, size and colour, hollow and solid blocks, manufactured sand etc. have been tested in laboratories and found to be satisfactory. Use of fine aggregates and coarse aggregates manufactured by recycling of C & D waste has also been validated scientifically for part replacement of natural aggregates

The Rule (9) sub-rule (4) mentions that the *'Procurement of materials made from construction and demolition waste shall be made mandatory to a certain percentage (say 10-20%) in municipal and Government contracts subject to strict quality control.'* Private developers to be also encouraged to mandate a percentage for procurement of materials made from construction and demolition waste subject to strict quality control.

- i. Efficient building ratings like GRIHA, LEED etc. can explore factoring the utilization of C & D wastes in their computations
- ii. Since CPWD, BIS and NBCC promote :
 - Maximum of 20% replacement of aggregates in RCC with RCA (recycled concrete aggregates)
 - 100% replacement of aggregates with RCA in light or non-load bearing lean concrete

Need to incentivize use of C & D waste products in both - structural and non-structural applications.
- iii. Cost savings up to 15% can be observed for finished products such as paving blocks made from recycled aggregates (Ref. Market study on C & D waste utilization in Ahmadabad. : GIZ & Development Alternatives (DA).

l) Architectural initiatives

Though there may be several such instances however two examples are highlighted wherein creativity has been used to reuse C & D waste in buildings ex.

- a. A school building in Rajkot, designed by Ahmedabad-based architect Surya Kakani, has been built from the debris of the Bhuj earthquake.
- b. The Institute of Rural Research and Development (IRRAD) building in Gurgaon has innovatively recycled and utilised its own construction waste in the building.

m) Drainage

As per C & D Waste Rules (Rule 4 sub-rule (4)) there should be no littering or deposition of construction and demolition waste so as to prevent obstruction to the traffic or the public or drains. A proper drainage plan ensures planned disposal of water during rains / floods. Rivers to be protected from littering or deposition of construction and demolition waste to prevent obstruction to river flow.

Case study : Flood in Mega city - Mumbai ((Ref. Mumbai Marooned: An Enquiry into Mumbai Floods 2005) July 26, 2005 has gone down as a day no Mumbaikar will forget. A record 994 mm (37.2 inches) of rain within 24 hours (75% of the downpour – 709 mm — fell in a five-hour period between 2.30 pm and 7.30 pm), widespread flooding and the loss of lives and property, the virtual shutdown of the city for two days (more in some areas)..... At least one-third of the surface area of the city is believed to have been flooded.

On issues on pertaining to waste management the following were the observations:

- i. *According to official BMC figures, Mumbai generates about 7,800 tonnes of solid waste daily. However, this figure is probably significantly inflated by the contractor lobby. NGOs working in the field of solid waste management state that no one seems to have an accurate figure of the amount of solid wastes generated in Mumbai. (page 30).*
- ii. *Construction debris, silt etc forms a substantial part (2,000 tonnes per day according to the BMC) of waste. This debris is also used to illegally fill low-lying land and mangroves. Construction debris such*

as concrete, cement and brick rubble can be used as road base and crushed and re-used to cast concrete blocks etc. These practices are legally mandated and in place in many developed countries. The recycling of construction debris should be legally mandated in Mumbai, and if necessary the required infrastructure (crushers etc) can be set up by tapping funds from the construction lobby (page 70).

- iii. *'Dumping of waste (solid or effluent) in rivers and nallahs must be punishable by a fine and/ or imprisonment. Within a year, the BMC should provide adequate waste disposal facilities to these areas or relocate those it cannot provide services to (page 75).*
- iv. *Un-authorized construction on open Nallas and alongside Nallas and drains has narrowed the width of the drains thus reducing their clearing capacity; Drain choking incidents were reported at 14 places.*

(Ref. Mumbai Marooned: An Enquiry into Mumbai Floods 2005).

n) Equipment deployment:

Different types of sorting devices and screens are used for separating contaminants from end-product and grading the recycled product in various grain sizes. Vibrating screens, star screens or disc-separators are used for removal of impurities. Other existing equipment include jaw crushers and impact crushers etc are used to suit the requirements of recycling and processing of C & D waste.

o) Green belt plantation

Green belt has been recognized as an effective shield to abate pollution mainly activities generating DUST. The report 'Guidelines for Developing Greenbelts' (CPCB March 2000) is a referral document to identify native species w.r.t. climatic zones. The criteria for selection for development of Green Belt include:

- i. The plant species should be fast growing & native to the region
- ii. They should have thick canopy cover preferably perennial.

p) Enforcement

Though stringent laws are being formulated by the civic bodies their enforcement however needs to be further strengthened Roads sides, vacant plots and river banks could be freed from debris dumps and drains freed from clogging if C & D waste is properly disposed /managed.

q) Training programs - Awareness of recycling C & D wastes

The BMTPC Guidelines highlights that for cities of population < one million : *Sensitization and facilitation for re-use and recycling of C & D waste may also be taken up in cities of population less than 1 million to encourage such initiative.*

SPCBs / PCCs and ULBs to conduct sensitization training programs highlighting good practices and economic viability of establishing C & D waste recycling operations that are being implemented in various cities across the country.

7. C & D waste management - case study DELHI

Delhi government advisory C & D waste utilization

The Delhi government has issued an advisory on the use of products made out of recycled C & D waste by the Public Works Department (PWD). All Delhi government agencies will be required to incorporate a clause in their tenders that mandates use of a minimum of 2 per cent recycled products from construction waste in all future contracts for building works and 10 per cent recycled products for road works. (CSE August 26, 2015)

All C & D plants coming up under the Public Private Partnership (PPP) model. Key features are given below:

- i. Delhi generates approximately 3000 MT of C & D waste per day as per IL&FS
- ii. Country's 1st C & D processing facility – Civic body: North Delhi Municipal Corporation (NMC); City – DELHI; Brief highlights: Site is at Burari, Jahangirpuri in North Delhi in collaboration with MCD developed by private operator IL&FS Environmental Infrastructure & Services Ltd (IEISL) to demonstrate the potential of a scientifically managed process in collection and recycling of C & D waste in Delhi of capacity 500 TPD.

- Plant commissioned during 2009 on a 10 acre site at Burari, Jahangirpuri in North Delhi.
- iii. **Delhi East Kidwai Nagar, New Delhi** : 2nd C & D facility set up by private operator M/s Enzyme India Pvt. Ltd. in year 2014 on PPP model with 100% by back by NBCC with a capacity of 150 TPD
 - iv. **Delhi -Shashtri Park, New Delhi** : C & D plant in Delhi at Shastri Park in East Delhi at 2.5 acre site by private operator IL&FS, The facility will get mixed C & D waste from 15 designated sites of East Delhi.
 - v. Civic body South Delhi Municipal Corporation (SDMC): The proposed plant at Ghumanhera in West Delhi will have a capacity to process some 500 tonnes of C & D waste per day.
 - vi. Public Works Department (PWD): proposes to set up THREE C & D debris recycling plants in Delhi, each of installed capacity of 150 TPD. Two plots of two acres each identified at Tikri Kalan, Libaspur and near Nizamuddin Bridge, another plant being proposed at Kapashera.
 - vii. C & D charges :
 - a. EDMC: There is a challan of up to Rs. 5,000/- for dumping waste illegally.
 - b. SDMC: imposition processing fee of Rs 205 per MT at time of sanctioning building plan and Rs 225 per MT for lifting waste. The transportation charges would be increased by 10% every two year.

8. Initiatives in C & D waste management in 69 cities

Based on literature survey the data on C & D waste management initiatives taken by some urban local bodies in some major cities have been compiled in **ANNEXURE I**: Based on literature survey , the annexure shows initiatives in C & D waste management in 69 cities, the data demonstrates that cities are recognizing the importance of processing C & D wastes hence many cities have stipulated collection charges and introduced penalties for illegal disposal.

Salient features of Enforcement as derived from Annexure I is summarized:

- a. C & D waste processing facilities are being established on PPP mode (private operators).
- b. Land acquisition for C & D waste processing

Most of the cities are either in the final stages of acquiring site for establishing C & D waste processing site or have identified alternate sites which need to be evaluated for be economic sustainability.

c. Intermediate collection points – Some ULBs have declared designated sites for dumping C & D debris.

d. Public services :

- i. Many ULBs have announced Helpline toll free number for citizens for reporting illegal dumping of C & D waste provided
- ii. Complaints by email: ex Chandigarh - Citizen can also be emailed at *bi_mcc@chdut.nic.in*. MCC has vouched that *malba* will be collected within 48 hours of the complaint.
- iii. Timing for C & D (*malba*) collection - Collection of *malba/ C & D waste* between 9 am and 5 pm. (Chandigarh)
- iv. Call centre number 040-21111111 and 'My GHMC App' (Greater Hyderabad)

e. C & D waste lifting charges :

Different criteria have been used to setting fees for lifting C & D wastes ex.

- i. 0.5 to 0.75 tonnes - Rs. 500/- ; between 0.75 tonnes to 1.50 tonnes - Rs. 1,000/- ; between 1.50 tonnes to 3 tonnes – Rs 2,000 ; between 3 to 6 tonnes - Rs. 4,000/-
- ii. For a structure > 80 sq m area Rs. 50/- per month ; Rs. 100/- charged for 120 sq. metre. Beyond 120 sq. metre, Rs. 200/- ; Stacking of construction/ demolition debris Rs. 1500/- per tractor trip Rs. 3000/- per truck trip
- iii. To collect a quantity of *malba* between less than 25 cubic feet (cu ft) - Rs. 50 ;for > 25 cu ft Rs. 2 per cu ft extra is charged.
- iv. GHMC user fee Rs 360 per tonne (Greater Hyderabad).

f. Penalty range:

- i. Dumping of *malba* in front of houses, parks or at any other public space has been banned and any violation has a penalty of Rs. 500. (Chandigarh)
- ii. A fine of Rs. 1,000 will be levied on those mixing construction debris with wet waste
- iii. The civic body (PMC) has put a ban on dumping waste in open spaces, riverbeds, canals and quarries. Imposition fine of Rs 25,000 on such illegal dumping (Pune MC).
- iv. The Corporation imposes a fine of Rs. 2000/- . (Chennai)
- v. Penalty for not removing C & D waste , fine of Rs. 5000/- per tonne (Thiruvanthapuram).

- vi. **Penalty:** For not delivering Construction and Demolition waste in a segregated manner as specified there is a fine of Rs. 1000/- & For dumping of construction and demolition waste in non-designated areas there is a fine of Rs 5000/-. (Shillong)
- vii. **Penalty:** Violating norms while transporting construction debris , penalty Rs 5,000 (Ghaziabad)
- viii. **Penalty:** Construction debris dumping on road, public places and open places = Rs. 1000/-.(Amravati)
- ix. **Penalty:** Failure in lifting C & D Waste (at least one truck load) from designated location OR Failure in transportation of C & D Waste to the processing facility per instance processing facility per instance OR Failure to lift claimed C & D Waste from the generator within 48 hrs. per instance – fine Rs 2000 ; Failure to lift C & D Waste dumped on roadside within 24 hrs. per instance – fine . Rs. 1000/- ; Non-performance of any other obligation under the Agreement for a continuous period of 7 (seven) days fine Rs. 10000/-. (Vijayawada)
- x. **Penalty:** for of C & D wastes ; fine ranging from Rs. 100/- to Rs. 500/- (Surat)

Timelines for implementation of C&D Waste Rules 2016

Schedule III [See Rule 13] Timeframe for Planning and Implementation

Compliance Criteria	Cities with population of >=one million	Cities with population of 0.5-01 million	Cities with population of < 0.5 million
Formulation of policy by State Government	12 months	12 months	12 months
Identification of sites for collection & processing facility	18 months	18 months	18 months
Commissioning and implementation of the facility	18 months	24 months	36 months
Monitoring by SPCBs	3 times a year / in 4 months	2 times a year / once in 6 months	2 times a year / Once in 6 months



Figure 9.1: Loss of C & D wastes implies “loss of opportunities to reuse / recycle”

References:

1. <http://iced.cag.gov.in/wp-content/uploads/2014/02/1.-Audit-Report-on-Waste-Management-in-India.pdf>
2. https://ntepa.nt.gov.au/_data/assets/pdf_file/0005/284684/noise_guidelines_for_development_sites.pdf
3. BIS : http://www.igep.in/live/hrdpmp/hrdpmaster/igep/content/e48745/e49028/e63437/e63438/e63444/StandardizationofCDRecycledproducts_Yajjala.pdf
4. CSE 2014: <http://www.cseindia.org/userfiles/Construction-and%20demolition-waste.pdf>
5. Detailed Project Report for Construction and Demolition Waste Management in Chennai City (IIT Madras November 2015)
6. Ref. Mumbai Marooned: An Enquiry into Mumbai Floods 2005
<http://www.cat.org.in/files/reports/Mumbai-Marooned.pdf>

ANNEXURE I : Initiatives in C & D waste management in 69 cities

Sl.	State	City	Status of C & D waste processing / disposal facility
1.	Tamil Nadu	Coimbatore	<u>Civic body</u> - Coimbatore City Municipal Corporation (CCMC) estimates that of the 850 TPD wastes generated about 150 TPD is construction debris. CCMC has proposed a processing plant of capacity 100 TPD
2.	Tamil Nadu	Madurai	<u>Civic body</u> - Madurai city corporation has earmarked places four locations for disposal C & D wastes : <ul style="list-style-type: none"> • at Vilankudi old dumping yard at ward 1 for zone 1 • at Masthanpatti (Palathottam) at ward 29 for zone 2 • at Gatelock Road at ward 71 for zone 3 and • at Vellaikal dumping yard at ward 94 for zone 4. Earlier C & D waste was being dumped along the river at Thirumalairayar Padithurai on south bank and Mathichiyam on the north bank.
3.	Maharashtra	Nagpur	<u>Civic body</u> : Nagpur Municipal Corporation (NMC) lifts, transports and dumps construction and demolition material at Bhandewadi dump yard engaging services of private operator m/s Kanak Resources Management Ltd.
4.	Maharashtra	Nashik	<u>Civic body</u> : NMC has identified sites for dumping C & D debris. Inert processing unit of capacity 50 TPD established
5.	Gujarat	Ahmedabad	<u>Civic body</u> : Ahmadabad Municipal Corporation (AMC) m/s DNP Infrastructure Pvt. Ltd. has been awarded operations of a 300 TPD C & D waste processing plant 5 acres of land
6.	Madhya Pradesh	Indore	<u>Civic body</u> : Indore Municipal Corporation (IMC) : 75 TPD C & D waste processing facility on four acres of land in Devguradia region
7.	Madhya Pradesh	Ujjain	C & D wastes dumped at MR-V Agar Road trenching ground located about 4 km from the city.
8.	Orissa	Bhubaneswar	<u>Civic body</u> : <u>Bhubaneswar Municipal Corporation</u> (BMC) proposes to set up a C & D waste <u>processing plant</u> on public-private-partnership mode. The civic body has identified two sites for dumping of waste - Patia and Kargil Basti. <u>C & D charges</u> : For a structure > 80 sq m area Rs. 50/- per month ; Rs. 100/- charged for 120 sq. metre. Beyond 120 sq. metre, Rs. 200/- ; Stacking of construction/ demolition debris Rs. 1500/- per tractor trip Rs. 3000/- per truck trip <u>Disposal</u> : Regional Landfill of non bio-degradable and inert material site at Brajrajnagar/ Jharsuguda.

9.	Tamil Nadu	Salem	<ul style="list-style-type: none"> Large quantity non-hazardous waste (e.g. C & D waste / flyash) disposed is being off in monofills (i.e. receiving one type of waste). The City Municipal Corporation has appointed a Bangalore-based private consultant to prepare a project report for the integrated solid waste management scheme.
10.	Tamil Nadu	Thanjavur	<p>Construction of Rural Roads using C & D Waste Materials: By addition of C & D waste materials in the sub-base layer of the road structure, the conventional laterite layer of rural road formation can be further strengthened; quantity of utilization of laterite is reduced and thus leads to cost reduction in road laying.</p> <ul style="list-style-type: none"> Dumpsite near STP site - Thepperaumanallur.
11.	Tamil Nadu	Vellore	- Total (MSW + C & D)
12.	Kerala	Kochi	- Total (MSW + C & D)
13.	Maharashtra	Sholapur	- Total (MSW + C & D)
14.	Maharashtra	Aurangabad	-
15.	Maharashtra	Mumbai – (Kalyan-Dombiwali)	As of 2014, Mumbai generates over 10,000 metric tonnes of waste per day - 8,000 metric tonnes of MSW and 2,000 metric tonnes of debris.
16.	Maharashtra	Thane	-
17.	Punjab	Chandigarh	<p><u>Civic body</u> : Municipal Corporation Chandigarh (MCC), MCC has also identified 18 low-lying areas for dumping of debris. Facility – MSW facility in Dadu Majra , after compressing waste it is then covered with a layer of C & D about 2 feet thick.</p> <p><u>C & D charge</u> - Collection of <i>malba</i>/ C & D waste between 9 am and 5 pm. MCC has fixed amounts for <i>malba</i> collection.</p> <p>To collect a quantity of <i>malba</i> between less than 25 cubic feet (cu ft) - Rs. 50 ;for > 25 cu ft Rs. 2 per cu ft extra is charged.</p> <p>The rate at which MCC is charging to the residents, is hardly one third of the total cost incurred by the municipality. But the municipality does not mind spending this amount, as its aim is to make citizens conscious of cleanliness and contribute towards keeping their city clean.</p> <p><u>Penalty</u>: Dumping of <i>malba</i> in front of houses, parks or at any other public space has been banned and any violation has a penalty of Rs. 500.</p>

			Mobile helpline number MCC provide number 3274154 to book complaint for <i>malba</i> removal. Complaints can also be emailed at <i>bi_mcc@chdut.nic.in</i> . MCC has vouched that <i>malba</i> will be collected within 48 hours of the complaint.
18.	Rajasthan	Jaipur	The state government proposes set up C & D Waste Processing Plants in 29 cities including state capital, Jaipur. In Jaipur a private company proposes to set up recycling facility capacity 300 TPD on 6 acres of land near the existing dumping stations.
19.	Uttar Pradesh	Lucknow	Disposal of C & D waste and inert material used as covering material in Telibagh Bhatha Maidan area.
20.	Karnataka	Bengaluru	<u>Civic body</u> : Bruhat Bengaluru Mahanagara Palike (BBMP) - The BBMP proposes to put up the C & D waste processing facilities in PPP mode in three abandoned quarry areas in Kannur, Mallasandra and Anjanapura , each with capacity to process 750 TPD he facility to BBMP. <u>Penalty</u> : A fine of Rs. 1,000 will be levied on those mixing construction debris with wet waste
21.	Maharashtra	Pune	<u>Civic body</u> : PMC : The C & D waste in Pune constitutes 40% of MSW in Pune. District administration has allocated 2 acres of land at Wagholi for C & D waste processing. <u>Penalty</u> : The civic body (PMC) has put a ban on dumping waste in open spaces, riverbeds, canals and quarries. Imposition fine of Rs 25,000 on such illegal dumping.
22.	Madhya Pradesh	Bhopal	-
23.	Telangana	Hyderabad	<u>Civic body</u> : The transport wing deploys for Greater Hyderabad Municipal Corporation (GHMC) vehicles for collection and transportation of C & D waste from bulk generators. Proposed disposal sites - setting up of a decentralised C & D waste plants at four identified locations, Fathullaguda, Jeedimetla, Kothwalguda and Mallapur. <u>C & D charge</u> - GHMC user fee Rs 360 per ton. Public service : call centre number 040-21111111 and 'My GHMC App'.
24.	Tamil Nadu	Chennai	<u>Disposal</u> : <ul style="list-style-type: none"> • According to Chennai Corporation- East, there is one dumping yard present in each of the 15 zones of the city. • There are two dumping sites in Chennai Perungudi and Kodungaiyur where, a large amount of C & D waste is being dumped. • Cooum, Adyar, Buckingham Canal and Pallikaranai marshland are popular sites where construction debris is dumped illegally.

			<ul style="list-style-type: none"> • <u>C & D waste disposal designated areas</u> : Sathangadu (Tiruvottiyur), CPCL junction (Manali), GNT Road Sembiam Sengundram Road (Madhavaram), Kodungaiyur (Tondiarpet), Moolakothalam crematorium (Royapuram), Otteri disposal yard (Thiru Vi Ka Nagar), Devi Karumariamman Nagar crematorium (Ambattur), 1st Avenue of Gajalakshmi Colony (Anna Nagar), Karaneeswarar Pagoda Street Recycling Plant (Teynampet), Anna Avenue (Kodambakkam), Ramavaram Bharathi Road (Valasaravakkam), MGR Nagar recycling plant (Alandur), Near Kotturpuram Railway Station (Adyar), Perungudi dumpyard (Perungudi) and Gangai Amman Koil Street Extension in Karapakkam (Sholinganallur). . • <u>Penalty</u>: The Corporation imposes a fine of Rs. 2000/-.
25.	Kerala	Thiruvananthapuram	<u>Penalty</u> : For not removing C & D waste , fine of Rs. 5000/- per tonne.
26.	Bihar	Patna	<u>Civic body</u> : Patna Municipal Corporation (PMC) - Site at Bairia , area of 80 acres approx. under PMC has been used for open dumping for last 2-4 years. Waste collected from across the 72 wards,as well as part of the waste collected from the three ULBs of Danapur, Phulwari and Khagaul is presently reaching the designated dump site at village Bairia on the Gaya road
27.	West Bengal	Kolkata	C & D wastes recycled in road construction in Kolkata: The recycling process is best suited to roads with light traffic.
28.	Assam	Guwahati	-
29.	Meghalaya	Shillong	<u>Disposal</u> : proposed use at landfill site at Mawiong to cover as a layer (earth) for covering compacted garbage. <u>Penalty</u> : For not delivering Construction and Demolition waste in a segregated manner as specified there is a fine of Rs. 1000/- & For dumping of construction and demolition waste in non-designated areas there is a fine of Rs 5000/-.
30.	Maharashtra	Mumbai	In September 2005, the Municipal Corporation of Greater Mumbai issued the Demolition and Desilting Waste (Management and Disposal) Guidelines but due to lack of enforcement, demolition debris still ended up in dumping grounds. The Youth for Unity and Voluntary Action (YUVA) and City Industrial Development Corporation (CIDCO then came up with a <u>decentralized</u> solution for recycling debris into

			construction material such as bricks and interlocking pavers. <u>Penalty:</u> For not delivering Construction and Demolition waste in a segregated manner as specified there is a fine of Rs. 1000/-
31.	Jammu & Kashmir	Srinagar	Srinagar Municipal Corporation has one dumping site at Syedpora Achan spread over 540 kanals of land
32.	Punjab	Ludhiana	-
33.	Punjab	Amritsar	Propose to use C & D waste in making roads.
34.	Haryana	Faridabad (M.Corp.)	Propose to set up C & D waste recycling facility near Kachra Chowk on the Gurgaon-Faridabad Road
35.	Himachal Pradesh	Shimla	C [^] D waste recycling plant proposed in Darni ka Bagicha area.
36.	Rajasthan	Jodhpur	The existing trenching site is located at Dabi Road Nanta nearly 10-15 km from the city having area of 52.28 ha, there is a dumping site at Keru (15 km away from the city Jodhpur). <u>Penalty:</u> Selling of segregated/ un segregated waste and Usable/recyclable items from the MSW - Upto Rs 25,000/- per incident ; Waste found on road side/ on road Rs .500/- per incident
37.	Uttarakhand	Dehradun	<u>Civic body</u> - Dehradun Nagar Nigam (DNN) The existing SW disposal site is located at Dateda Lakhond on Sahashradhara Road , distance of 7 km from the town.
38.	Uttar Pradesh	Ghaziabad	Density of construction waste in MSW samples = 1663.47 Kg/cu m <u>Penalty:</u> Violating norms while transporting construction debris , penalty Rs 5,000
39.	Uttar Pradesh	Agra	-
40.	Uttar Pradesh	Meerut	<u>Recycle of C & D waste</u> - Left over cement and mortars, cement concrete blocks, aggregate, sand and other inorganic material is recycled and reused as Granular Sub Base (GSB) layer of pavement. Earth rendered surplus from the excavation is utilized in the embankment works.
41.	Uttar Pradesh	Allahabad	<u>Recycle C & D wastes</u> - bricks of C & D in road works & river banks works
42.	Maharashtra	Amravati	<u>Penalty:</u> Construction debris dumping on road, public places and open places = Rs. 1000/-.
43.	Andhra Pradesh	Greater Visakhapatnum Municipal Corporation	<u>Civic body GVMC</u> - C & D waste processing unit at Visakhapatnam under PPP model. The state government has accorded permission to the Swachha Andhra Corporation to float Request for Proposal for 80 TPD capacity recycling plant near Kapuluppada.

		(GVMC)	
44.	Andhra Pradesh	Vijaywada	<p>Unauthorised disposal of C & D debris on Bandar Canal bund near Krishna Lanka , Kanaka Durga Varadhi and Eluru canal near Sitaramaraju bridge C & D waste processing unit at Vijaywada under PPP model.</p> <p><u>Penalty:</u> Failure in lifting C & D Waste (at least one truck load) from designated location OR Failure in transportation of C & D Waste to the processing facility per instance processing facility per instance OR Failure to lift claimed C & D Waste from the generator within 48 hrs. per instance – fine Rs 2000 ; Failure to lift C & D Waste dumped on roadside within 24 hrs. per instance – fine . Rs. 1000/- ; Non-performance of any other obligation under the Agreement for a continuous period of 7 (seven) days fine Rs. 10000/-.</p>
45.	Kerala	Kozhikode	Civic body - Municipal Corporation Kozhikode , propose to set up facility under PPP mode
46.	Kerala	Thrissur	-
47.	Kerala	Malappuram	-
48.	Kerala	Kannur	-
49.	Kerala	Kollam	Kollam MC has a disposal site (4 ha) at Kureepuzha 6 Km from the city centre functioning since 2002. Civic body- Kollam
50.	Tamil Nadu	Tiruchirappalli	Civic body - Trichy Corporation passed a resolution to control the indiscriminate dumping of C & D wastes on roads, riverbanks, canals and ponds. The corporation plans to utilize the C & D wastes in brick-making, with the technical support from IIT –Chennai
51.	West Bengal	Asansol	Civic body – AMC , two waste disposal sites under the AMC at Kalipahari (27 acres) and other at Samdihi, Burnpur (area 03 acres) – mainly MSW , operator M/s. GEPIL
52.	Jharkhand	Jamshedpur	Jamshedpur proposes to recycle a major part of its solid waste. Delhi-based consultant m/s Tetra Tech India Private Ltd to install a integrated solid waste management = compost plant + a sanitary landfill (disposal facility for inert wastes) + C & D waste processing facility to produce eco-friendly bricks. Site – at Khairbani on the city’s outskirts.
53.	Jharkhand	Dhanbad	<u>Penalty:</u> Dhanbad Municipal Corporation has decided to impose a fine of Rs 1,000 per day with immediate effect on citizens found guilty of dumping C & D wastes on public roads or dustbins.
54.	Jharkhand	Ranchi	Recycle C & D waste: Brick making is used in processing C & D wastes

55.	Chhattisgarh	Raipur	C & D waste segregated & sold balance used for filling low lying areas.
56.	Assam	Dispur	Most of the C & D debris used for the filling of low areas. Government has allotted a landfill site of 40 acres at Baragaon, 20 km away from Guwahati for composting MSW 100 TDP and dumping of C & D waste
57.	Mizoram	Aizwal	<u>Civic body</u> - Aizwal Municipal Corporation (AMC) has identified four low lying locations to dump the C & D wastes to develop flat land.
58.	Nagaland	Kohima	<u>Civic body</u> - KMC ; disposal site about 8 Kms away from the city on NH- 39 for MSW
59.	Maharashtra	Vasai Vihar City	<u>Civic body</u> -Vasai Virar Municipal Corporation (VVMC)
60.	Gujarat	Gandinagar	Civic body -GMC ; C & D waste is transported by private contractors waste to privately owned low-lying land at a price
61.	Gujarat	Surat	For C & D the civic body has allotted 12,000 sq.m. land at Kosad for dumping. Helpline – toll -free number '1800-212-2829' for collection of C & D wastes. Penalty: for of C & D wastes ; fine ranging from Rs. 100/- to Rs. 500/-
62.	Gujarat	Vadodara	-
63.	Gujarat	Rajkot	<u>Civic body</u> -RMC taken initiative to collect and dispose C & D waste separately and setup a C & D processing facility of 100 TPD
64.	Madhya Pradesh	Jabalpur	Civic body - Municipal Corporation Jabalpur on PPP mode
65.	Madhya Pradesh	Gwalior	Disposal site - Kedarpur.

ANNEXURE II: POTENTIAL USES OF C & D WASTES

C & D waste	Potential use of C & D wastes
Concrete	<p>The utilization of recycled aggregate is particularly very promising as 75 per cent of concrete is made of aggregates.</p> <p><u>Opportunity:</u> The enormous quantities of demolished concrete can easily be recycled as aggregate and used in concrete. Research & Development activities have been taken up all over the world for proving its feasibility, economic viability and cost effectiveness.</p> <p>Work on recycled concrete has been carried out at few places in India by CBRI and CRRI, but waste and quality of raw material produced being site specific, tremendous inputs are necessary if recycled material has to be used in construction for producing high grade concrete.</p>
Bricks	<p>If deconstructed properly, bricks can be reused after removal of mortar. Broken bricks can be used for refilling or for manufacturing debris paver blocks or debris blocks.</p>
Stone	<p>Stone can be reused for plinth formation, masonry construction, landscape purpose, ledges, platforms, window sills, coping etc. depending upon the form of available stones.</p>
Timber	<p>Timber elements from deconstructed building may have aesthetic and antique value.</p> <p><u>Opportunity :</u> Whole timber arising from construction and demolition works can be utilized easily and directly for reused in other construction projects after cleaning, de-nailing and sizing.</p>
Plywood and other timber based boards	<p>Plywood and other timber based boards can be either reused for interior works in new construction or it can be recycled for manufacturing of timber based boards.</p>
Gypsum	<p>In India, over 10 about of waste gypsum such as phosphor-gypsum, fluro-gypsum etc., are being generated annually.</p> <p><u>Opportunity :</u> Plaster developed from this waste gypsum has showed improved engineering properties without any harmful effect. Phosphor-gypsum and lime sludge can be recycled for manufacture of Portland cement, masonry cement, sand lime bricks, partition walls, flooring tiles, blocks, gypsum plaster, fibrous gypsum boards, and super-sulphate cement.</p>
Metals & metal alloys-	<p>Ferrous Metals are the most profitable and recyclable material. Scrap steel is almost totally recycled and allowed repeated recycling. Structural steel can be reused as well as 100% steel can be recycled to avoid wastage at construction site.</p>

	<p><u>Advantage</u> : Generally sold to a scrap metal dealer at a specified price. Metals like scrap iron can be mixed with the virgin metal in the foundry. In India more than 80% scrap arising is recycled.</p>
Non ferrous metal	<p>The main non ferrous metal collected from construction and demolition sites are aluminium, copper, lead and zinc .</p> <p><u>Opportunity</u> : In India aluminium and copper are recycled and are valuable resources</p>
Debris	<p>Construction debris can be recycled to manufacture paver blocks which can be used in light traffic areas and masonry blocks. Other uses of processed debris include use in lean concrete for leveling purpose, as mortar for masonry, as bedding mortar for pavement tiles and used for land filling materials is comparable with new materials.</p> <p><u>Opportunity</u>: Market potential on an average in Pune city estimates about 40 crores of bricks in a year.</p>
Composite materials	<p>The plastic wastes are best for recycling if these materials are collected separately and cleaned. Recycling is difficult if plastic wastes are mixed with other plastics or contaminants. Plastic may be recycled and used in products specifically designed for the utilization of recycled plastic, such as street furniture, roof and floor, PVC window noise barrier, cable ducting, panel.</p> <p><u>Constraint</u>: The third largest consumer of composite materials is <u>construction sector</u>, automobile and aeronautics being first two largest consumers. Composite materials like thermoplastics are not only using non-renewable resources, they are non-biodegradable products. Thermoplastics (Polycarbonate, polyethylene, polypropylene, PVC etc.) can be recycled, but recycling involves high costs, whereas thermosets (Epoxy adhesives) are difficult to recycle. The lack of adequate markets, high recycling cost, and lower quality of the recyclates are the major commercialization barriers in recycling of composite materials. PVC-U sourced mostly from window and door fabricators is being recycled into wiring accessories and cable management systems including skirting and trunking. Composite materials can be down-cycled.</p>
<p>Ref : https://www.researchgate.net/publication/256677141_construction_and_demolition_waste_management_with_reference_to_case_study_of_Pune</p>	

ANNEXURE III: GLOBAL PRACTICES OF UTILIZATION OF C & D WASTES (Ref. BMTPC Guidelines)

City / country	C & D Waste utilization
Ontario, Canada	A target fixed to divert 50% of the C & D waste from landfills by 2000 using 1987 waste production levels as baseline.
Alberta, western province of Canada.	Re-use/recycling of C & D began in late 2008.
Nova Scotia, Canadian Province	Halifax Regional Municipality is (2011) diverting more than 80% of C & D waste from storage in landfill to reuse and recycling.
Netherlands, Sweden, Denmark, Austria, France and Switzerland	recycle 80 to 90% of their C & D waste.
Tokyo	Enforced the construction waste recycling law in 2002. The current rate of recycling of waste concrete is more than 99% (Source: Tokyo Metro Waste Management web site).
In Australia - cities of Sydney and Melbourne.	The reuse and recycling is more than 80%
UK	The Olympic Stadium in London used 30% recycled concrete in its construction. United Kingdom regulations explicitly permit use of recycled and manufactured aggregates in non structural framework without any discrimination in relation to aggregate from natural resources. 28% of aggregates used in UK are recycled C & D waste aggregate.
USA, cities like New York.	<ul style="list-style-type: none"> • Have no place for landfill for disposal of C & D waste, as was practiced a decade ago. • does not have any C & D waste disposal facility, it exports C & D waste to neighbouring states by paying a tax Construction sites use C & D waste in renovations or new construction
California , USA	Reusing / recycling about 60% of C & D waste.
Portland, Oregon USA	More than 2/3 rd of C & D waste is getting recycled / reprocessed.
Minnesota, USA	About 70% of demolition debris and 60% construction waste are being salvaged, recycled and reprocessed.
Singapore	Reusing / recycling 980% C & D waste (land constrained area).
Indonesia and Malaysia	Reusing / recycling about 50 to 60% of C & D waste.
Portugal	reuse/recycling of C & D waste is less than 40%
Hong Kong	C & D waste utilization is 60%.
Korea	Effective cycling rate is 36 per cent, with a target of increasing this to 45 per cent by 2016.

ANNEXURE IV**Criteria for site selection of C & D waste processing facility (SCHEDULE I)**

(Note: numerals in brackets as per Notification of C & D waste Rules 2016)

- i. (4) The processing or recycling shall be large enough to last for 20-25 years (project based on-site recycling facilities).
- ii. (5) The processing or recycling site shall be away from habitation clusters, forest areas, water bodies, monuments, National Parks, Wetlands and places of important cultural, historical or religious interest.
- iii. (6) A buffer zone of no development shall be maintained around solid waste processing and disposal facility, 20 tons or more in one day or 300 tons per project in a month of installed capacity. This will be maintained within the total area of the solid waste processing and disposal facility. The buffer zone shall be prescribed on case to case basis by the local authority in consultation with concerned State Pollution Control Board.
- iv. (7) Processing or recycling site shall be fenced or hedged and provided with proper gate to monitor incoming vehicles or other modes of transportation.
- v. (8) The approach and or internal roads shall be concreted or paved so as to avoid generation of dust particles due to vehicular movement and shall be so designed to ensure free movement of vehicles and other machinery.
- vi. (9) Provisions of weigh bridge to measure quantity of waste brought at landfill site, fire protection equipment and other facilities as may be required shall be provided.
- vii. (10) Utilities such as drinking water and sanitary facilities (preferably washing/bathing facilities for workers) and lighting arrangements for easy landfill operations during night hours shall be provided and Safety provisions including health inspections of workers at landfill sites shall be carried out made.
- viii. (11) In order to prevent pollution from processing or recycling operations, the following provisions shall be made, namely:
 - a. Provision of storm water drains to prevent stagnation of surface water;
 - b. Provision of paved or concreted surface in selected areas in the processing or recycling facility for minimizing dust and damage to the site.
 - c. Prevention of noise pollution from processing and recycling plant.
 - d. Provision for treatment of effluent if any, to meet the discharge norms as per Environment (Protection) Rules, 1986.
- ix. (15) A vegetative boundary shall be made around Processing or Recycling plant or site.



Central Pollution Control Board

Parivesh Bhawan, C.B.D Cum Office Complex, East Arjun Nagar,

Delhi – 110032

Website : <http://cpcb.nic.in/>

283

Annexure- III



केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE, GOVT. OF INDIA

No.: CM-13011/181/2024-LAW-HO-CPCB-HO 3378

07/08/2024

To

The Member Secretary
Uttar Pradesh Pollution Control Board
Building No. TC - 12V, Vibhuti Khand,
Gomti Nagar, Lucknow – 226010 (UP)

Subject: Improper management and misuse of green belts in Sector Sigma 2, Greater Noida, U.P. - regarding.

Ref.: Hon'ble NGT Order dated 05.07.2024 in Original Application No. 734/2024 (IA No. 264/2024) titled RWA Sector Sigma 2 Versus Union of India & Ors.

Sir,

This has reference to above cited Hon'ble National Green Tribunal (NGT) order dated 05.07.2024 in Original Application No.734/2024 (IA No. 264/2024) titled RWA Sector Sigma 2 Versus Union of India & Ors. (Copy of Hon'ble NGT order dated 05.07.2024 and Original Application are enclosed).

Grievance raised by the applicant in the matter is about misuse of green belts in Sector Sigma 2, Greater Noida, Gautam Budh Nagar, U.P. due to illegal encroachment / construction.

In view of above, it is requested that the matter may be examined at appropriate level and action as required, if any, may please be taken. The status of the same may please be provided to this office at the earliest.

Encl.: As above

Yours faithfully,

Sharandeep Singh
07/08/2024
(Sharandeep Singh)
Divisional Head UPC-I

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निधि. Nsingh
दिनांक 7/8/2024

‘परिवेश भवन’ पूर्वी अर्जुन नगर, दिल्ली-110032

Parivesh Bhawan, East Arjun Nagar, New Delhi - 110032

दूरभाष/Tel: 43102030, 22305792, वेबसाइट/Website : www.cpcb.nic.in



केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE, GOVT. OF INDIA

No.: CM-13011/181/2024-LAW-HO-CPCB-HO 3377

07/08/2024

To

The Chairman
Greater Noida Industrial Development Authority
Plot No. 01, Knowledge Park-04
Greater Noida, Gautam Budh Nagar,
Uttar Pradesh - 201308

Subject: Improper management and misuse of green belts in Sector Sigma 2, Greater Noida, U.P. - regarding.

Ref.: Hon'ble NGT Order dated 05.07.2024 in Original Application No. 734/2024 (IA No. 264/2024) titled RWA Sector Sigma 2 Versus Union of India & Ors.

Sir/Madam,

This has reference to above cited Hon'ble National Green Tribunal (NGT) order dated 05.07.2024 in Original Application No.734/2024 (IA No. 264/2024) titled RWA Sector Sigma 2 Versus Union of India & Ors. (Copy of Hon'ble NGT order dated 05.07.2024 and Original Application are enclosed).

Grievance raised by the applicant in the matter is about misuse of green belts in Sector Sigma 2, Greater Noida, Gautam Budh Nagar, U.P. due to illegal encroachment / construction.

In view of above, it is requested that the matter may be examined at appropriate level and action as required, if any, may please be taken. The status of the same may please be provided to this office at the earliest.

Encl.: As above

Yours faithfully,

Sharandeep
07/08/2024
(Sharandeep Singh)
Divisional Head UPC-I

2346/UPC/24
07/08/2024

o/c
केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निर्देश NS/10/19
दिनांक 7/8/2024

‘परिवेश भवन’ पूर्वी अर्जुन नगर, दिल्ली-110032

Parivesh Bhawan, East Arjun Nagar, New Delhi - 110032

दूरभाष/Tel: 43102030, 22305792, वेबसाइट/Website : www.cpcb.nic.in



285

Annexure-V
केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE, GOVT. OF INDIA

No.: CM-13011/181/2024-LAW-HO-CPCB-HO 4071

17/09/2024

To

The Member Secretary
Uttar Pradesh Pollution Control Board
Building No. TC - 12V, Vibhuti Khand,
Gomti Nagar, Lucknow – 226010 (UP)

Subject: Reminder: Improper Construction and Demolition waste management and misuse of green belts in Sector Sigma 2, Greater Noida, U.P. - regarding.

Ref.: 1. Hon'ble NGT Order dated 05.07.2024 in Original Application No. 734/2024 (IA No. 264/2024) titled RWA Sector Sigma 2 Versus Union of India & Ors.
2. Letter of even no dated 07.08.2024

Sir/Madam,

This has reference to above cited Hon'ble National Green Tribunal (NGT) order dated 05.07.2024 in Original Application No.734/2024 (IA No. 264/2024) titled RWA Sector Sigma 2 Versus Union of India & Ors. (Copy of Hon'ble NGT order dated 05.07.2024 and Original Application are enclosed) wherein Grievance raised by the applicant is about misuse of green belts in Sector Sigma 2, Greater Noida, Gautam Budh Nagar, U.P due to illegal encroachment/ construction on the green belts and illegal dumping of construction waste.

In view of the above, CPCB, in its letter dated 07.08.2024, requested an examination of the matter and necessary action. However, CPCB has not received any response to date and requests a report on the actions taken at the earliest. Please send the action taken report to email upc1.cpcb@gov.in

Encl.: As above

Yours faithfully,

(Sharandeep Singh)
CPIO & Divisional Head UPC-I

242/UPC/24
17/9/2024

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निर्गत... NSingh
दिनांक... 17/9/2024

‘परिवेश भवन’ पूर्वी अर्जुन नगर, दिल्ली-110032

Parivesh Bhawan, East Arjun Nagar, New Delhi - 110032

दूरभाष/Tel: 43102030, 22305792, वेबसाइट/Website : www.cpcb.nic.in



286

Annexure-VI

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE, GOVT. OF INDIA

No.: CM-13011/181/2024-LAW-HO-CPCB-HO 4072

17/09/2024

To

The Chairman
Greater Noida Industrial Development Authority
Plot No. 01, Knowledge Park-04, Gautam Budh Nagar
Greater Noida, Uttar Pradesh - 201308

Subject: Reminder: Improper Construction and Demolition waste management and misuse of green belts in Sector Sigma 2, Greater Noida, U.P. - regarding.

Ref.: 1. Hon'ble NGT Order dated 05.07.2024 in Original Application No. 734/2024 (IA No. 264/2024) titled RWA Sector Sigma 2 Versus Union of India & Ors.
2. Letter of even no dated 07.08.2024

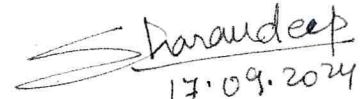
Sir/Madam,

This has reference to above cited Hon'ble National Green Tribunal (NGT) order dated 05.07.2024 in Original Application No.734/2024 (IA No. 264/2024) titled RWA Sector Sigma 2 Versus Union of India & Ors. (Copy of Hon'ble NGT order dated 05.07.2024 and Original Application are enclosed) wherein Grievance raised by the applicant is about misuse of green belts in Sector Sigma 2, Greater Noida, Gautam Budh Nagar, U.P due to illegal encroachment/ construction on the green belts and illegal dumping of construction waste.

In view of the above, CPCB, in its letter dated 07.08.2024, requested an examination of the matter and necessary action. However, CPCB has not received any response to date and requests a report on the actions taken at the earliest. Please send the action taken report to email upc1.cpcb@gov.in

Encl.: As above

Yours faithfully,


17.09.2024
(Sharandeep Singh)
CPIO & Divisional Head UPC-I

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निर्गत N.S. Singh
दिनांक 17/09/2024

‘परिवेश भवन’ पूर्वी अर्जुन नगर, दिल्ली-110032

Parivesh Bhawan, East Arjun Nagar, New Delhi - 110032

दूरभाष/Tel: 43102030, 22305792, वेबसाइट/Website : www.cpcb.nic.in

Item No. 06

Court No. 1

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

Original Application No. 734/2024
(IA No. 264/2024)

RWA Sector Sigma 2

Applicant

Versus

Union of India & Ors.

Respondent(s)

Date of hearing: 05.07.2024

**CORAM: HON'BLE MR. JUSTICE PRAKASH SHRIVASTAVA, CHAIRPERSON
HON'BLE MR. JUSTICE ARUN KUMAR TYAGI, JUDICIAL MEMBER
HON'BLE DR. A. SENTHIL VEL, EXPERT MEMBER**

Respondent: Mr. Atul Kumar, Adv. for Applicant

ORDER

1. In this original application the applicant has raised the grievance against improper management and misuse of green belts in Sector Sigma 2, Greater Noida, Gautam Budh Nagar, U.P. The allegation of the applicant is in respect of the green belt being GB – 9, GB- 10, GB-11 and GB – 13. Submission of counsel for the applicant is that GB – 9, GB- 10 and GB-11 are not properly maintained and no green cover has been developed therein. So far as GB -13 is concerned, heavy constructions have been raised. He has further referred to annexure A-20 and submitted that even a country liquor shop has been setup in the green belt. He has also relied upon the photographs filed collectively as annexure A-23 and submitted that huge constructions has been raised on the green belt and in spite of the complaint to the concerned authorities no action has been taken.

2. The O.A. raises substantial issue relating to compliance of the environmental norms and implementation of the provisions of scheduled enactments.

3. Issue notice to the respondents. The applicant is directed to serve the respondent and file affidavit of service at least one week before next date of hearing.

4. List on 24.09.2024

Prakash Shrivastava, CP

Arun Kumar Tyagi, JM

Dr. A. Senthil Vel, EM

July 05, 2024
O.A. No. 734/2024
HB