SPEED POST

No.B-29012/ESS(CPA)/2015-16/ April 26, 2016

To

The Chairman,
Of State Pollution Control Boards of –
Andhra Pradesh, Telangana, Uttar Pradesh, Karnataka, Punjab, Jharkhand, Haryana, Gujarat, Govt. of NCT Delhi, Tamil Nadu, Maharashtra, Madhya Pradesh, Rajasthan, Chhatisgarh, West Bengal, Kerala, Punjab

SUB: DIRECTIONS UNDER SECTION 18(1)(b) OF THE WATER (PREVENTION & CONTROL OF POLLUTION) ACT, 1974 and THE AIR (PREVENTION & CONTROL OF POLLUTION) ACT, 1981 TO UNDERTAKE ENVIRONMENTAL QUALITY MONITORING AND FOR INSTALLATION OF CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS AND REAL-TIME WATER QUALITY MONITORING STATIONS IN CRITICALLY POLLUTED AREAS.

WHEREAS, under Section 17 of the Water (Prevention & Control of Pollution) Act, 1974, and under Section 17 of the Air (Prevention & Control of Pollution) Act, 1981, one of the functions of the State Pollution Control Boards (SPCBs)/Pollution Control Committees(PCCs) is to plan comprehensive programmes for the prevention, control or abatement of pollution of streams and wells and prevention , control or abatement of air pollution in the State/Union territory and to secure the execution thereof; and

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, Central Pollution Control Board (CPCB) undertook a programme of identifying Critically and Severally Polluted Areas and implementation of plans for restoration of environmental quality in such areas; and

WHERAS, during 2009-10, Central Pollution Control Board (CPCB) in collaboration with Indian Institute of Technology (IIT), Delhi had carried out comprehensive environmental assessment of 88 industrial clusters and rated them on the concept of Comprehensive Environmental Pollution Index (CEPI). The evaluated CEPI scores reflect the environmental quality of these industrial clusters and also served as a yardstick to assess the progress achieved in the implementation of action plans. Out of identified 88 industrial clusters, 43 industrial clusters in 16 States having CEPI score of 70 and above were identified as Critically Polluted Areas (CPAs). Further, 32 industrial clusters with CEPI scores between 60 & 70 were categorized as seriously polluted areas (SPAs). Details of Critically Polluted Areas and Severally Polluted Areas as per 2009-10, is attached as Annexure 1.

WHEREAS, Environmental quality monitoring is being carried out periodically by CPCB through laboratories recognized under the Environment (Protection) Act, 1986 and CEPI is being assessed based on the recorded monitoring data and other inputs in respect of these 43 CPAs. So far, three rounds of monitoring have been undertaken by CPCB (2009, 2011, 2013) in all the 43 CPAs based on which CEPI scores were evaluated.

WHEREAS, it has been experienced that some factors are difficult to measure objectivity like potentially affected population and assessment of health impacts etc;

WHEREAS, proposals were received from the SPCBs, State Governments, Industrial Associations and concerned Stake-holders for revisiting the criteria of assessment of CEPI concept;

WHEREAS After careful examination of the suggestions of concerned stake-holders, it was considered desirable to formulate the revised concept of CEPI by eliminating the subjective factors but retaining the factors which are monitorable. Accordingly, attempts were made to develop the 'Revised Criteria of CEPI' based on the following principles:

- ✓ Retaining the existing algorithm based on Source, Pathway and Receptor.
- ✓ Develop the Revised CEPI considering the sources of pollution, real time observed values of the pollutants in the ambient air, surface water & ground water of the industrial cluster and health related statistics. The concept is based on the selection of 3 criteria pollutants for each of the environment components i.e. air, surface water and ground water which together indicate the well being of ambient environment.
- ✓ Assessment of environmental quality of the area based on the concept of SNLF to which is a surrogate number representing the level of exposure (a function of percentage sample exceedence & **Exceedence** Factor).
- ✓ Health related statistics to be based on health data available from major hospitals in the area.

WHEREAS, the 'Draft Document on Revised CEPI Version' was circulated among the SPCBs, PCCs, concerned State /UT Governments, Ministries, IITs , Academic Institutions , CSE and other stake-holders for their observations &

comments. The same was uploaded on the website of CPCB also for information & comments.

WHEREAS, the issues raised by stake-holders were addressed/considered and final document on 'Revised CEPI Concept 2016' has been evolved. Attempts have been made to make the concept simple so as to facilitate the citizen to evaluate the CEPI score. Some of the important features of the 'Revised CEPI Concept' are as follows:

- ✓ Revised CEPI is comprised of the following components:

Component A	Scale of Industrial Activity	20 marks
Component B	Status of Ambient Env. Quality (Air/SW/GW)	50 marks
Component C	Health related statistics	10 marks
Component D	Compliance status of industries	20 marks

- ✓ Air EPI, Surface Water EPI and Ground Water EPI i.e i1, i2 and i3 , will be calculated separately on a scale of 0-100 by the formula – i1 or i2 or i3 = A+B+C+D.
- ✓ Overall CEPI will be evaluated using the existing formula, i.e., CEPI = **i-max + [(100 – i-max) × (i2/100) × (i3/100)]**
  Where, i-max – maximum index (which may be either Air EPI or SW EPI or GW EPI); and i2, and i3 are indices for other media.
  Decision regarding selection of criteria pollutants shall be taken as advance and shall be the most relevant in the context of specific CPAs and should be communicated to CPCB.
- ✓ The concept can be applied to locations also other than industrial clusters

WHEREAS, the revised concept of CEPI 2016 encompasses significant weightage to the tune of 50 % to the observed quality of ambient environment and in order to have a constant and continuous monitoring data of the ambient air quality and surface / ground water resources , there is a need to install Continuous Ambient Air Quality Monitoring Stations and Real Time Water Quality Monitoring Stations at various locations in the identified Critically Polluted Areas.

WHEREAS, SPCBs/PCCs are required to implement action plans for restoring environmental quality and bring down CEPI scrores; and

Now, therefore, in exercise of the powers conferred under Section 18 (1) (b) of the Water (Prevention & Control of Pollution) Act, 1974, and 18 (1) (b) of the Air (Prevention & Control of Pollution) Act, 1981 and ensure prevention, control and abatement of pollution in critically polluted industrial clusters and keeping in view strengthening of the monitoring mechanism for effective compliance through self regulatory mechanism, following directions are hereby issued for compliance:

Part A: Environmental quality monitoring in all CPAs

1. That the SPCB/PCC shall undertake environmental quality monitoring in the critically polluted area falling under their jurisdiction through an outside third party agency (laboratory) recognised under Environment (Protection) Act, 1986 and accredited under NABL. The frequency of the monitoring shall be twice in a year i.e. Post-monsoon season and Pre-monsoon season).
2. That the SPCB/PCC shall ensure that the existing sampling locations where monitoring was undertaken in 2013 are retained and additional monitoring locations, if any required, can be included in the monitoring programme in consultation with concerned Zonal Offices of CPCB and (or) Head Office, CPCB.
3. That the SPCB/PCC shall ensure that the sampling stations are provided at strategic locations across the industrial clusters so as to obtain a truly representative environmental quality of the critically polluted area. Moreover, the concerned SPCBs /PCC shall ensure that there is at least one Ambient Air Quality monitoring station each in the predominant upwind and downwind directions at each of the CPA.
4. That the SPCBs/PCC shall collect 3 samples with a gap of one or two days at each location during each round of monitoring in all the CPAs.
5. That at each of the CPA, 24 hourly ambient air quality monitoring shall be carried out for parameters as detailed in Annexure-2. Also, representative samples for surface water quality and ground water quality shall be collected from prominent surface and ground water bodies located in and around the CPAs. List of water quality parameters is presented in Annexure-2.

Part B : Installation of Continuous Ambient Air Quality Monitoring Stations:-

6. That the SPCB/PCC shall coordinate with the 'Association(s) or any appropriate agency of the Industries of the concerned CPAs and direct them for installation of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) at strategic locations of identified Critically Polluted Areas. For this purpose, 'Polluter Pays Principle' shall be applied and the data so acquired be displayed on the website of State Board for transparency in law-enforcement.
7. That in those Critically Polluted Areas, where no CAAQMS is so far installed, at-least 2 CAAQMS be installed to start with, one each in the windward and leeward direction within a year;
8. That the existing network of continuous ambient air quality monitoring stations (CAAQMS) in CPAs established by 17 Category of highly polluting industries, shall be redesigned if necessary, by shifting/ relocating some stations to cover the entire city/area. This will reduce duplicity in monitoring and ensure optimum utilization of the available monitoring facilities and resources.
9. That the existing manual monitoring under NAMP, will be continued. In case, there is no NAMP station in the area, then manual monitoring will also be conducted atleast once in a month on 24 hourly basis.

Part C : Installation of Continuous Water Quality Monitoring Stations :-

10. That the SPCBs / PCC shall ensure installation of Real Time Water Quality Monitoring Stations at various locations of identified Critically Polluted Areas in conformity with the CPCB guidelines for water quality monitoring

(MINARS/27/2007-08). The SPCBs / PCC shall adopt 'Polluter Pays Principle' for achieving these objects.

11. That in those Critically Polluted Areas, where no CWQMS are yet installed, at-least 2 CWQMS be installed to start with, one each in the upstream and downstream locations of the major receiving water body of the area within a year.
12. That the existing manual monitoring under MINAR (Monitoring of Indian National Aquatic Resources) programme will also be continued. In case, there is no MINAR station in the area, then manual monitoring will also be conducted atleast once in a month. Ground Water Quality Monitoring should be carried out at existing locations (i.e. bore-wells, tube wells, deep hand pumps etc) and as per national monitoring protocol. Monitoring of heavy metals, VOCs and Pesticides should also be undertaken in addition to regular parameters of MINAR programme.

Part D : Application of revised CEPI version 2016

13. That since 'Revised CEPI 2016' has been evolved, henceforth, all future CEPI score evaluations shall be made on the basis of revised formula.
14. That all the polluting sources identified in the area shall be notified and brought in the public domain through respective websites alongwith the details of their pollution control compliance status.
15. That the environmental quality data including CEPI score of the industrial area as per revised concept shall also be placed in public domain through website and also to be published by the State Government periodically.
16. That the concerned State Government shall notify the area on a properly scaled map and also issue public advisories that such an area will be exclusively meant for industrialization as per the State land.
17. That the revised CEPI shall be used by the State Governments, SPCBs and others concerned to understand the severity of pollution existing in the area and formulate appropriate action plan. Further, sufficient time shall be given for effective implementation of the action plan before imposition of moratorium. Thus, the revised concept shall be an early warning tool to ensure the successful implementation of Action Plan.
18. That the CEPI shall not be used by the Bankers / Money Lending Institutions for financial decisions.
19. That any moratorium on expansion on setting up of new industries shall be imposed on a particular CPA only after a notice period of one year from the initial announcement of CEPI assessment. However decision on any directions already in force in a CPA shall be taken as per correct practice in vogue. High CEPI score shall also be used as early warning tool to require preparation of pollution management plans to reduce pollution levels before it reaches critical levels.
20. That for any industry in a critically polluted area, the changes which make it less polluting shall be permitted. These changes may include expansion of production capacity / change of product / change of raw materials / change of manufacturing process or a combination of these changes and shall be examined and assed by respective SPCBs/PCC.

Part E : Action Plan and Monitoring

21. That the SPCBs/PCC shall also continue the regular exercise of water and air quality monitoring work at different locations including those stations currently in operation under NAMP and MINAR.
22. That the SPCB/ PCC shall take necessary measures to ensure regular maintenance and operation of the online systems with tamper proof mechanism including having facilities for online calibration;
23. That the SPCBs / PCC shall install the necessary software and hardware in their headquarter for centralized data collection, analysis and corrective action.
24. That the SPCBs/PCC shall take necessary measures to connect and upload the online air quality and water quality monitoring data on the Servers of respective SPCB/PCC and CPCB in a time bound manner but not later by June 30, 2016;
25. That the SPCBs/PCC shall upload on its websites the consent conditions of all industrial units alongwith their compliance status (updated half-yearly) with respect to prescribed norms.
26. That the action plan categorized into short, medium and long term basis shall be brought into public domain and the progress of implementation shall be reviewed by District and State level through Monitoring Committees.

The SPCBs/PCC shall acknowledge the receipt of directions and submit the Action Taken Report' along with time bound action plan for installation of online monitoring systems (Air and SW / GW) in the identified Critically Polluted Areas in compliance with these directions to CPCB before 15.06.2016.

(Arun Kumar Mehta)
Chairman

Copy to:

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3	The Chief Secretary, Government of Gujarat, New Sachivalaya (Secretariat) Gandhingar - 382010 (Gujarat)	4	The Chief Secretary, Government of Maharashtra Mantralaya, Mumbai-400032 (Maharashtra)
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7	The Chief Secretary , Government of Tamilnadu, Secretariat, Chennai-600009 (Tamilnadu)	8	The Chief Secretary , Government of Rajasthan Secretariat, Jaipur-302001 (Rajasthan)

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(A.B. Akolkar)
Member Secretary

Annexure-I

State-wise distribution of 43 critically polluted areas and 32 severely polluted areas identified based on CEPI criteria in 2009

Sr. No	Name of State	Clusters with CEPI >70 (43 Critically polluted areas)	Clusters with CEPI 60-70 (32 severely polluted areas)
1.	**Andhra Pradesh**	Vishakhapatnam (70.82),	Vijayawada (60.57)
2.	**Bihar**	--	West Singhbhum (67.30)
3.	Chhatisgarh	Korba (83.00)	Raipur (65.45)
4.	Delhi	Najafgarh-Drain basin (79.54) including Anand Parbat, Naraina, Okhla, Wazirpur	--
5.	Gujarat	Ankleshwar (88.50), Vapi (88.09), Ahmedabad (75.28), Vatva (74.77), Bhavnagar (70.99), Junagarh (70.82)	Vadodara (66.91), Rajkot (66.76)
6.	Haryana	Faridabad (77.07), Panipat (71.99)	--
7.	**Himachal Pradesh**	--	Baddi (69.07), Kala Amb (68.77), Parwanoo (63.83)
8.	Jharkhand	Dhanbad (78.63)	Jamshedpur (66.06), Saraikela (65.38), Ramgarh (65.11), Bada Jamtara (64.47)
9.	Karnataka	Mangalore (73.68), Bhadravati (72.33)	Raichur (68.07), Bidar (67.64), Pinia (65.11)
10.	Kerala	Greater Kochin (75.08)	--
11.	Madhya Pradesh	Indore (71.26)	Dewas (68.77), Nagda -Ratlam (66.67), Pitampur (65.09)
12.	Maharashtra	Chandrapur (83.88), Dombivalli (78.41), Aurangabad (77.44), Navi Mumbai (73.77), Tarapur (72.01)	Nashik (69.25), Chembur (69.19), Pimpari-Chinchwad (66.06)
13.	Orissa	Angul Talchar (82.09), Ib-Valley (74.00) Jharsugula (73.34)	Paradeep (69.26)
14.	Punjab	Ludhiana (81.66), Mandi Govindgarh (75.08)	Batala (68.59), Jalandhar (64.98)
15.	Rajasthan	Bhiwadi (82.91), Jodhpur (75.19), Pali (73.73)	Jaipur (66.82)
16.	Tamil Nadu	Vellore -North Arcot (81.79) , Cuddalore (77.45), Manali (76.32), Coimbatore (72.38)	Tirupur (68.38), Mettur (66.98)
17.	Telangana	Patancheru-Bollaram (70.07)	--
18.	Uttar Pradesh	Ghaziabad (87.37), Singrauli (81.73), Noida (78.90), Kanpur (78.09), Agra (76.48), Varanasi-Mirjapur (73.79)	Moradabad (64.71), Aligarh (63.83), Ferozabad (60.51)
19.	Uttarakhand	--	Haridwar (61.01)
20.	West Bengal	Haldia (75.43), Howrah (74.84), Asansole (70.20)	Durgapur (68.26)

A. Ambient air quality monitoring for following parameters

i. SO_2, NO_2, PM_{10}, $PM_{2.5}$, Lead and Ammonia (for 24 hourly average monitoring values)

ii. O_3, CO(for 1 hrly average and 8 hrly average)

iii. Benzene, Benzo (a) Pyrene, Arsenic & Nickel (for 24 hrly average value).

B. Water quality data of-

a) Prominent surface water bodies such as outfalls of CETPS, ETPS, FETP, treated effluent drainage, river, canal, ponds, lakes and other such water supply resources flowing through the area or flowing adjoining the CPA.

b) Ground water quality data of prominent ground water sources suah as observation well of central ground water board, drinking water wells, hand pumps, bore wells another such water supply resources located in the industrial cluster/ area under consideration or in the peripheral areas.

Basic water quality requirements (for surface water and ground water both) are as follows :

i) Simple parameters-

Sanitary survey, general appearance, color, smell, transparency and ecological* (presence of animals like fish, insects etc. only in case of surface waterbodies.

ii) Regular monitoring parameters

pH, O&G, suspended solids in mg, /l, DO(%saturation), COD in mg/l, BOD in mg/l, electrical conductivity in µmhos/cm, total dissolved solids, nitrite-nitrogen, nitrate – nitrogen,(NO2+NO3)Total nitrogen in mg/l, free ammonia, total residual chlorine , cyanide, fluoride, chloride, sulphate, sulphides, total hardness, dissolved phosphates, SAR, Total coliforms, fecal coliform(MPN/100ml).

iii) Special parameters-

Total phosphorous, TKN, Total ammonia (NH4+NH3)- NITROGEN, PHENOLS, SUFACE ACTIVE AGENTS, ANIONIC DETERGENTS, OGANO-CHLORINE PESTICIDES, PAH, PCB, AND PCT, Zinc, Nickel, Copper, Hexavalent chromium, chromium total, arsenic(total, lead, cadmium, mercury, manganese, iron, vanadium, selenium, boron.

iv) **Bio-assay(zebra fish)test**-for specified samples only.

Note:

- *DO is not applicable in case of ground waters.*
- *DO in eutrophicated waters should include measurements for diurnal variations.*
- *SS limit is applicable only during non-monsoon period.*
- *Fecal coliform values should meet for 90% times.*
- *Static bio-assay method may be adopted.*

Final Document on Revised CEPI Version – 2016

Salient features and detailed methodology of revised CEPI concept :

Central Pollution Control Board (CPCB) in collaboration with Indian Institute of Technology (IIT), Delhi had carried out comprehensive environmental assessment of 88 prominent industrial clusters during 2009-10 based on Comprehensive Environmental Pollution Index (CEPI) criteria. CEPI is a rational number between 0 and 100, assigned to a given location to characterize the environmental quality following the algorithm of source, pathway and receptor. Out of identified 88 prominent industrial clusters, 43 industrial clusters in 16 States having CEPI score of 70 and above are identified as Critically Polluted Industrial Clusters. Further, 32 industrial clusters with CEPI scores between 60 & 70 are categorized as severely polluted areas. Thereafter, Ministry of Environment & Forests (Govt. of India) had imposed temporary moratorium vide O. M. 13.01.2010 on consideration of developmental projects in critically polluted industrial cluster/areas including the projects in pipeline for Environmental Clearance.

The present methodology on evaluation of CEPI score (as depicted in Figure 1) has been a matter of discussion at various occasions including during the national level conferences as well as regular meetings with SPCBs and following issues were realized:

- Factors B2, B3, C1 and C3 of the existing CEPI concept require reliable health impact studies on humans, flora and fauna.
- These health studies require huge funds and time consuming as well as complex due to difficulty in finding truly representative data.
- Existing criteria of assigning values based on news reports, magazines, journals, NGO studies, published literature etc. is many times debated by various stakeholders.
- Existing criteria also lacks clarity with respect to potentially affected population.

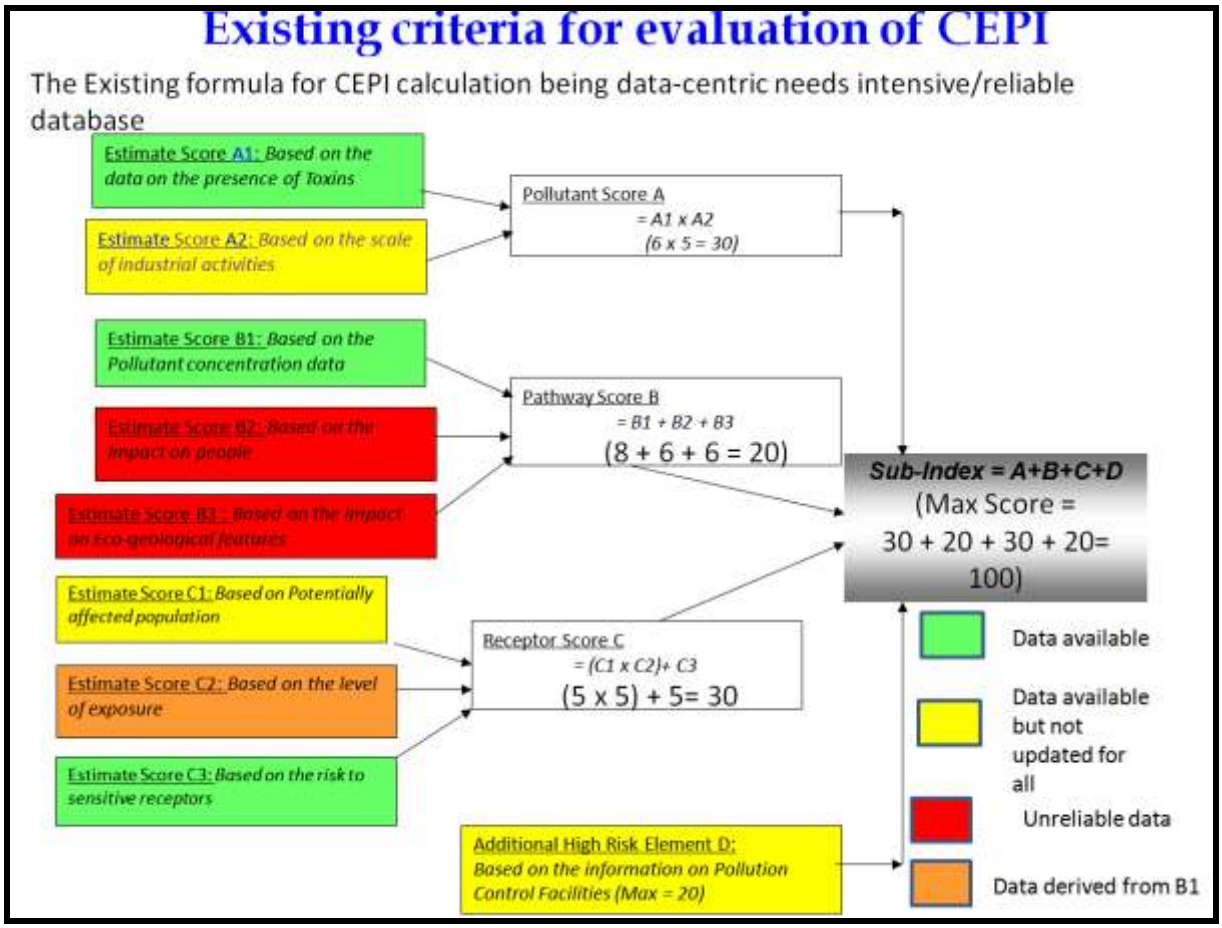

Figure 1: Existing criteria for evaluation of CEPI

Accordingly, to overcome the subjectivity, revised concept is proposed by eliminating the subjective factors as described in the previous section, but retaining the factors which can be measured precisely. The outlines of the revised CEPI criteria are as follows:

- ✓ Revised concept is prepared by eliminating the above debatable factors but retaining the factors which can be measured precisely.
- ✓ It is decided to develop the Comprehensive Environmental Pollution Index (CEPI) retaining the existing algorithm of Source, Pathway and Receptor.
- ✓ Health component was also retained in the revised concept in line with the suggestions of Secretary, MoEFCC during the meeting held in MoEF.

Outlines of revised CEPI criteria

The outlines of the revised CEPI criteria are as follows:

- ✓ It is proposed to develop the Comprehensive Environmental Pollution Index (CEPI) based on Sources of pollution , real time observed values of the pollutants in the ambient air, surface water and ground water in & around the industrial cluster and health related statistics.
- ✓ For assessment of the environmental quality of the area i.e. CEPI score, the concept of SNLF i.e. a surrogate number which represents the level of exposure (a function of percentage sample exceedence & Exceedence Factor) shall be used.
- ✓ Health component to be evaluated based on the health data available from major hospitals in the area was also retained in the revised concept.

Revised CEPI will comprise of following components:

Component	Weightage
Scale of industrial activity	20
Scale of exceedance of Environmental Quality (Level of exposure)	50
Health related statistics	10
Compliance status of industries	20
	100

The basic framework of the revised CEPI based on algorithm of Source, Pathway and Receptor, has been presented in Figure-2.

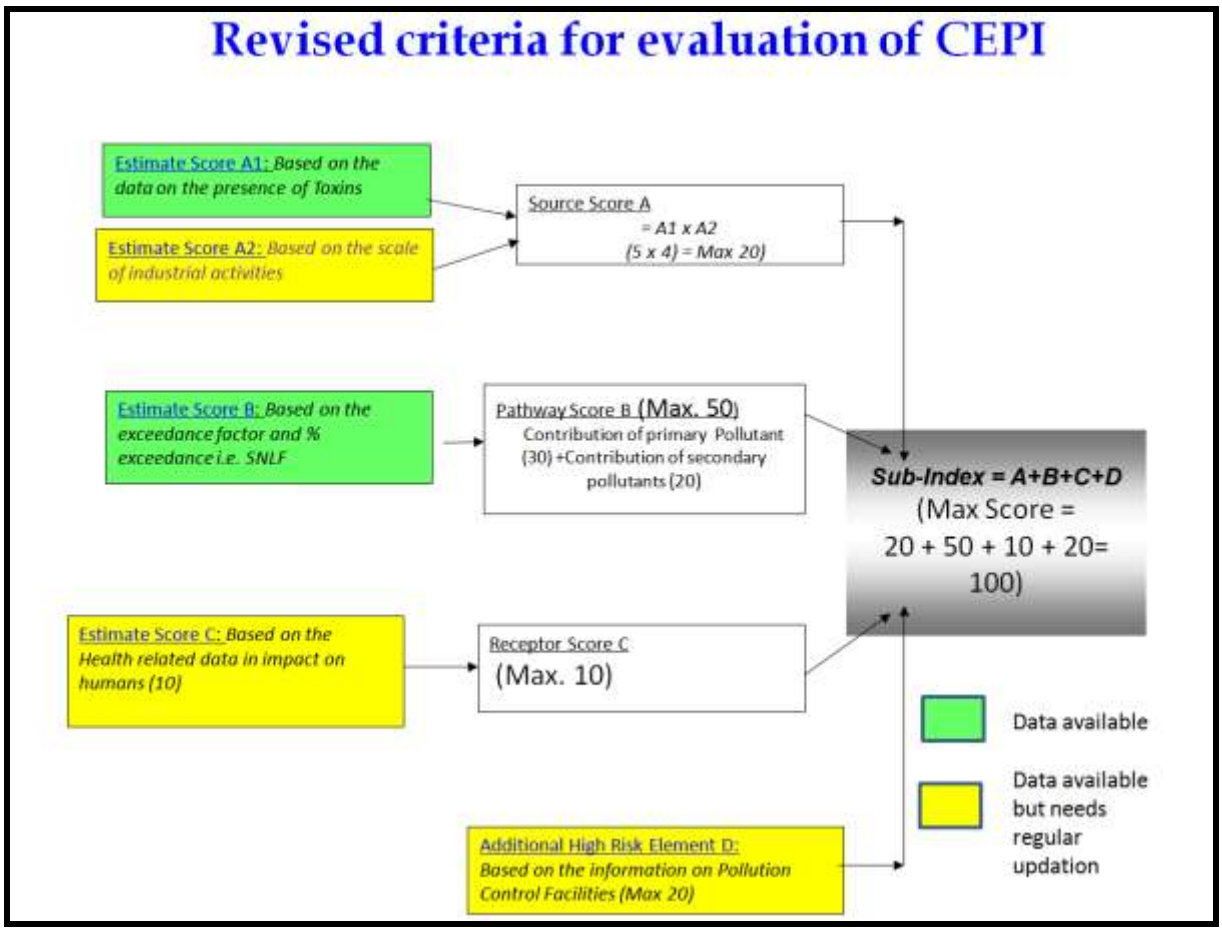

Figure-2 : Revised criteria for evaluation of CEPI

Salient features of revised CEPI criteria:

- Environmental Pollution Index (EPI) is a rational number to characterize the environmental quality of ambient Air/Surface Water /Ground Water of an Area.
- Air EPI, Surface Water EPI and Ground Water EPI will be calculated separately on a scale of 0-100.
- Overall CEPI will be evaluated using the existing formula, i.e.,

  CEPI = **i-max + [(100 – i-max) × (i2/100) × (i3/100)]**

  Where, i-max – maximum index (which may be either Air EPI or SW EPI or GW EPI); and i2, and i3 are indices for other media.
- Area for the purpose of CEPI study shall be notified by concerned SPCB as per the direction of CPCB.

- For each area, sampling protocol will be laid down by CPCB and the monitoring locations will be finalized by CPCB in consultation with concerned SPCBs.
- Guidelines for the use of CEPI will be notified by CPCB.
- Environmental quality monitoring shall be undertaken by concerned SPCBs on half-yearly basis and data will be placed in the public domain:

Season	Period of monitoring	Target date of Report submission
Pre-monsoon	April-June	31st July
Post-monsoon	Dec.-Feb.	31st March

- The monitoring data shall be analysed for the parameters exceeding the prescribed norms and time targeted remedial action plans be formulated by concerned SPCBs for the same.

Revised CEPI Evaluation Methodology

A: Source

- **Factor #A1 - Presence of Toxin**
  - Group A – Pollutants / chemicals that are not assessed as acute or systemic = 1
  - Group B – Organics / Pollutants / chemicals that are probable carcinogens (USEPA Class 2 and 3) or substances with some systemic toxicity. e.g. VOC's, PAHs, PCBs, air pollutants such as PM10 and PM2.5 = 2
  - Group C - Known carcinogens or chemicals with significant systemic or organ system toxicity. e.g. vinyl chloride, benzene, lead, radionuclide, hexa-chromium, cadmium, organophosphate pesticides. = 3

Selection of criteria pollutants :

Option 1: 3 pollutants relevant with the Area depending on the nature of industrial activity (preferable option/method)

Option 2: upto 3 most critical pollutants depending on the concentration and exceedance

- *Contribution of remaining two secondary pollutants will be based on the nature of the toxins as mentioned below:*

Group of toxicity of each of the Secondary Pollutants	***Contribution Value for each of the pollutant***
Group A	*0.25*
Group B	*0.50*
Group C	*1.00*

Max. Contribution of secondary pollutants=2.00

Max. score of A1=3+2 = 5

- **Factor #A2 – Scale of industrial activities**
  - Large = 4 (if there are
    > 10 R17 per 10 sq km area or fraction OR
    > 2 R17 + 10 R54 per 10 sq km area or fraction OR
    > 100 R54 per 10 sq km area or fraction
  - Moderate = 2.5 (if there are
    2 to 10 R17 per 10 sq km area or fraction OR
    10-100 R54 per 10 sq km area or fraction
  - Limited = 1 (else there is any industry within 10 sq km area or fraction)

SCORE A = A1 x A2 (max score = 5 x 4 = 20)

B: Pathway

Factor B- Level of exposure

A surrogate number which will represent Level of Exposure (SNLF) is calculated using % violation of ambient pollutant concentration, which is calculated as

SNLF = (No. of samples exceeded/ total no. of samples) x (Exceedance factor)

Range of SNLF	Category	Value
0 (For EF<0.75)	Low	0
0 (For 0.75<EF>0.8)	Low	1.5
0 (For 0.80<EF>0.85)	Low	3
0 (For 0.85<EF>0.9)	Low	4.5
0 (For 0.90<EF>0.95)	Low	6
0 (For 0.95<EF<1)	Low	7.5
<0.05	Moderate	8.25
0.05 to <0.1	Moderate	9
0.1 to <0.15	Moderate	9.75
0.15 to <0.2	Moderate	10.50
0.2 to <0.25	Moderate	11.25
0.25 to <0.30	Moderate	12
0.30 to <0.35	Moderate	12.75

0.35 to <0.4	Moderate	13.5
0.4 to <0.45	Moderate	14.25
0.45 to <0.5	Moderate	15
0.5 to <0.55	High	15.75
0.55 to <0.6	High	16.50
0.6 to <0.65	High	17.25
0.65 to <0.70	High	18.0
0.7 to <0.75	High	18.75
0.75 to <0.80	High	19.5
0.80 to <0.85	High	20.25
0.85 to <0.90	High	21.0
0.9 to <0.95	High	21.75
0.95 to <1	High	22.5
1.0 and above	Critical	30

Max. Contribution of primary pollutant=30

- Contribution of remaining two secondary pollutants will be based on their category of exceedance as mentioned below:

Level of SNLF of each of the Secondary Pollutants	Level of SNLF	Contribution Value for each of the secondary pollutants
0 (For EF<0.75)	Low	0
0 (For 0.75<EF>0.8)	Low	0.5
0 (For 0.80<EF>0.85)	Low	1
0 (For 0.85<EF>0.9)	Low	1.5
0 (For 0.90<EF>0.95)	Low	2
0 (For 0.95<EF<1)	Low	2.5
<0.05	Moderate	2.75
0.05 to <0.1	Moderate	3
0.1 to <0.15	Moderate	3.25
0.15 to <0.2	Moderate	3.50
0.2 to <0.25	Moderate	3.75
0.25 to <0.30	Moderate	4.0
0.30 to <0.35	Moderate	4.25
0.35 to <0.4	Moderate	4.5
0.4 to <0.45	Moderate	4.75
0.45 to <0.5	Moderate	5
0.5 to <0.55	High	5.25

0.55 to <0.6	High	5.50
0.6 to <0.65	High	5.75
0.65 to <0.70	High	6.0
0.7 to <0.75	High	6.25
0.75 to <0.80	High	6.50
0.80 to <0.85	High	6.75
0.85 to <0.90	High	7
0.9 to <0.95	High	7.25
0.95 to <1	High	7.5
1 and above	Critical	10

Max. Contribution of secondary pollutants=20

Maximum value of B = 30 + 20 =50

C : Receptor

Component C (Impact on Human Health) 10	
Main - 10	
% increase in cases*	Marks
<5%	0
5-10%	5
>10%	10

- % increase is evaluated based on the total no. of cases recorded during two consecutive years.
- For Air Environment, total no. of cases related to Asthma, Bronchitis, Cancer, Acute respiratory infections etc. are to be considered.
- For surface water / ground water Environment, cases related to Gastroenteritis, Diarrhea, renal (kidney)malfunction, cancer etc are to be considered.
- For the above evaluation, the previous 5 years records of 3-5 major hospitals of the area shall be considered.

d. Additional High Risk Element

Factor #D - Additional High Risk Element (Inadequacy of pollution control measures for large scale, medium and small scale industries and also due to unorganized sector). It is cumulative of ETPs, CETPs, Air Pollution Control Devises (APCDs) and unorganized waste disposal. Max. Score = 20

- If all the industries in the area have adequately designed/ operated and maintained pollution control facilities and also common facilities such as CETP/ FETP/ CHWDF are having adequate capacity and are having state of art technology = 0

- If all the large industries in the area have adequately designed/ operated and maintained pollution control facilities but small and medium industries are defaulting. Common facilities such as CETP/FETP/CHWDF are having adequate in capacity or operation/ maintenance = 5

- If all the industries in the area have adequately designed/ operated and maintained pollution control facilities but the common facilities

such as CETP/FETP/CHWDF are having inadequate in capacity or operation/ maintenance = 10

- If all the large industries in the area have adequately designed/ operated and maintained pollution control facilities but small and medium industries are defaulting. Common facilities such as CETP/FETP/CHWDF are having inadequate in capacity or operation/ maintenance = 15

- Inadequate Facilities of individual as well as common facilities, full penalty = 20

Table : Score for Additional High Risk Element: Factor D

S No.	Large Scale Industries	Small/ Medium Scale Industries	Common Facilities for Pollution Control	Score
1.	Adequate	Adequate	Adequate	0
2.	Adequate	Inadequate	Adequate	5
3.	Adequate	Adequate	Inadequate	10
4.	Adequate	Inadequate	Inadequate	15
5.	Inadequate	Inadequate	Inadequate	20

Inadequate Facilities: $\geq$ 10% units deficient in terms of design/ operation and maintenance of pollution control in case of small and medium scale industries

OR

$\geq$ 2% units deficiency in terms of design/ operation and maintenance of pollution control in case of Large scale industries or common facilities

The status report (last two years) shall be used for the purpose of deciding the score for adequacy.

Evaluation of the Ambient Air Index / Surface Water Index / Ground Water Index

After calculating A, B, C and D; calculate the sub index score (Air / Surface Water / Ground Water) as:

Sub-Index Score = (A + B + C + D)

Sub index scores are to be calculated for each of the individual environmental components that is, Air Environment, Surface Water Environment, and Soil & Ground Water Environment separately.

Calculation of the Aggregated CEPI

The aggregated CEPI Score can be calculated as.

CEPI = i_m + {(100 - i_m)*(i_2/100)*(i_3/100)}

Where,

i_m: maximum sub index; and

i_2, and i_3 are sub indices for other media

The revised CEPI concept from now will be termed as Revised CEPI Version 2016.

Note :

- For all other remaining information / references / appendices unless otherwise stated herein above, the parent CPCB Document on CEPI titled as " Criteria for Comprehensive Environmental Assessment of Industrial Clusters (EIAS/4/2009-10)" shall be referred.

- This document is available on the website of CPCB at the following web-link : http://cpcb.nic.in/divisionsofheadoffice/ess/NewItem_151_Final_Book1.pdf .

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