

File No.: HSM-11/13/2023-HSM  
GOVERNMENT OF INDIA  
MINISTRY OF ENVIRONMENT FOREST, & CLIMATE CHANGE

Indira Paryavaran Bhawan,  
Jal wing, Second floor,  
Aliganj, Jor Bagh Road,  
New Delhi-110003  
Dated: 02<sup>nd</sup> January, 2024

To,  
The Registrar General,  
Principal Bench,  
National Green Tribunal,  
Copernicus Marg, New Delhi-110001

**Subject: Action taken report filed by Ministry of Environment, Forest and Climate Change in Original Application no. 862 of 2022 in the matter of Pankaj Kumar Mishra & Ors. vs. Union of India & Ors. pending Hon'ble National Green Tribunal, Principal Bench, New Delhi-reg.**

Sir,

In compliance to the order dated 11.10.2023, passed by the Hon'ble National Green Tribunal in Original Application no. 862 of 2022 in the matter of Pankaj Kumar Mishra vs. Union of India & Ors., a report is hereby attached with a request to put up before the Hon'ble National Green Tribunal for consideration.

This issues with the approval of the Competent Authority.

Enclosure: As above

Yours Sincerely,

N. Subrahmanyam  
02/01/24

(N. Subrahmanyam)  
(एन. सुब्रह्मण्यम)  
(N. SUBRAHMANYAM)  
वैज्ञानिक 'डी' / Scientist 'D'  
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M/o Environment, Forest and Climate Change  
भारत सरकार, नई दिल्ली  
Govt. of India, New Delhi

**Action taken Report on behalf of Ministry of Environment, Forest and Climate Change, in compliance of order dated 11.10.2023 passed in Original Application No. 862 of 2022 titled Pankaj Kumar Mishra Versus Union of India & Ors. before the Hon'ble National Green Tribunal, Principal Bench, New Delhi.**

1. That Hon'ble Tribunal vide order dated 11.10.2023 in the above referred matter, observed the following:

*"5. The MoEF&CC has filed the report in compliance of the order dated 10.05.2023.*

*6. Learned Counsel appearing for the MoEF&CC seeks time to file a better action taken report before the next date of hearing. "*

2. It is submitted that 5<sup>th</sup> meeting of the "Fly Ash Management and Utilization Mission" (hereinafter referred to as 'Mission') was held on October 19, 2023, to review the progress of the measures implemented by thermal power plants, coal mines, stone crushers and industries relating to control and abatement of air pollution including the control of pollution arising from loading, unloading, transport, storage and disposal of ash generated from Thermal Power Plants. The matter pertaining to control of air pollution due to transportation activities in Singrauli and Sonbhadra region was included in the agenda of the meeting of the Mission. A copy of the Minutes of Meeting of the Mission dated 19<sup>th</sup> October, 2023 is enclosed at **Annexure-I.**

3. It is submitted that, the Mission has reviewed the action plans for the implementation of pollution control measures submitted by 5 Thermal Power Plants, 8 Coal mines (NCL), 56 Stone crushers, and 08 railway sidings (03 ECR; 03 ECR; 02 NCL) in Madhya Pradesh. Periodic Monitoring of these action plans for TPPs, coal mines and Industries is carried out by the State Board.

4. Further, in the meeting of the Mission, the implementation of pollution control measures by Thermal Power Plants in Singrauli and Sonbhadra regions in respect of storage and transportation ash was presented by MPPCB and UPPCB, such as adequate capacity

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silos to store fly ash, transportation of ash by bulkers, facilities for washing the wheels of transportation trucks, keeping pond ash in moist condition (about 15%), installation of permanent sprinklers, and roads sweeping through mechanical sweepers to prevent fugitive dust from ash handling and storage activities.

5. In the meeting Mission, MPPCB presented the action taken by the Environment Department of the Govt. of MP for execution of action plans for improvement of air quality in the Singrauli region. State Govt. has issued the following directives w.r.t to pollution control measures arising out of transportation activities:

- a) Decision on permission for inter-state transportation of fly ash from TPPs to Gorbi mine will be taken on the basis of merits of the activity.
- b) NTPC Vindhyanchal was directed to install dust control arrangements. Instructions were given to Sasan Power Plant for removal of fly ash from Thargatta and Garya drain and be verified by Oversight Committee.
- c) All TPPs in Singrauli were directed to complete all pending activities recommended by the Mission.
- d) East Central Railway and West Central Railways Siding Managements were directed to take coal dust emission control measures. Further, it was directed to communicate Chairman, Railway Board regarding non-implementation of action plan.

6. In addition, in the meeting of the Mission, pollution control measures implemented by the coal mines of M/s Northern Coalfields Ltd. located in Sonbhadra region and Singrauli region have been presented by UPPCB. Coal mines of M/s NCL have implemented various measures to prevent dust emissions from their operations namely, transporting coal in covered trucks covered with tarps, installing CCTV cameras at the mine exit to monitor trucks continuously, using a covered belt conveyor to move coal from the coal crusher to the rake loading point, misting water at material transfer points, using truck-mounted mist guns to mist coal, and using mobile tankers within the mine premises. Further, pollution control measures such as 44 fixed fog cannons, 20 tyre mounted cannons, 14 road sweeping machines and 173 mobile water sprinklers have been deployed in all NCL Mines.

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7. Further, in regard to the transportation of coal by road from coal mines to respective Thermal Power Plants, Mission has directed the Madhya Pradesh Pollution Control Board (hereinafter referred to as 'MPPCB') and Uttar Pradesh Pollution Control Board (hereinafter referred to as 'UPPCB') to issue directions for ensuring transportation of trucks covered with tarpaulin sheets for transportation of coal and ash by road and not to use thin LDPE sheets/green net to prevent spillage and fugitive emission of coal dust and fly ash during transportation.

8. Further, to monitor the implementation of air pollution control measures implemented by railway sidings located in Singrauli and Sonbhadra regions, the Railway Board has been requested to nominate an officer as a member of the Mission vide MoEFCC letter dated 30th November, 2023. Copy of the office memorandum dated 30<sup>th</sup> November 2023 is enclosed at **Annexure-II.**

9. Joint Committee recommendations with respect to measures to control air pollution from transportation of ash was deliberated in the meeting of the Mission and directed the UPPCB and MPPCB to submit the details of the action taken report regarding the compliance and implementation of the said recommendations. Further, all respective industries, TPPs, Mines, Stone crushers and Railway sidings were directed to ensure the compliance of the recommendations of the joint committee and submit the compliance report to SPCBs.

10. That it is respectfully submitted that the action taken report of the Ministry in compliance to order dt. 11.10.2023 passed by the Hon'ble NGT may be taken for kind consideration and may pass such other order and further order(s) as this Hon'ble Tribunal may deem fit and necessary in the interest of justice.

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**F. No. 11/3/2018- HSMD**  
**Government of India**  
**Ministry of Environment, Forest & Climate Change**  
**(HSM Division)**

Indira Paryavaran Bhawan  
Jor Bag Road, Aliganj  
New Delhi – 110003

Date: 24<sup>th</sup> November, 2023

**OFFICE MEMORANDUM**

**Sub.: Minutes of the fifth meeting of 'Fly Ash Management and Utilization Mission' held on 19.10.2023 - reg.**

The undersigned is directed to refer the fifth meeting of 'Fly Ash Management and Utilization Mission' held on 19.10.2023 at 11:00 AM at Indira Paryavaran Bhawan, New Delhi to review the status of actions taken based on the decisions made by the Mission in the meeting held on 04.07.2023.

2. In view of the above, minutes of the fifth meeting of 'Fly Ash Management and Utilization Mission' is enclosed herewith.
3. It is requested to furnish the action taken report to Central Pollution Control Board.

This issues with the approval of the Competent Authority.

**Encl.:** As stated

Yours sincerely,

  
**(Dr. Satyendra Kumar)**

Director

Ph: 011-20819291

Email: satyendra.kumar07@nic.in

To:

1. Secretary (Coal), Ministry of Coal, New Delhi
2. Secretary (Power), Ministry of Power, New Delhi
3. Secretary (Mines), Ministry of Mines, New Delhi
4. Chief Secretary, State of Uttar Pradesh
5. Chief Secretary, State of Madhya Pradesh
6. Chairman, CPCB, New Delhi

7. Additional Chief Secretary/Principal Secretary, Energy, Government of Uttar Pradesh
8. Additional Chief Secretary/Principal Secretary, Energy, Government of Madhya Pradesh
9. Additional Chief Secretary/Principal Secretary, Industries, Government of Uttar Pradesh
10. Additional Chief Secretary/Principal Secretary, Industries, Government of Madhya Pradesh
11. Director General, Directorate General of Mines Safety, Jharkhand
12. Additional Chief Secretary/Principal Secretary, Environment Department, Government of Madhya Pradesh
13. Additional Chief Secretary/Principal Secretary, Environment Department, Government of Uttar Pradesh
14. Chairman, UPPCB, Uttar Pradesh
15. Chairman, MPPCB, Madhya Pradesh
16. District Magistrate, Sonbhadra, U.P. (for stone crushers and all private mines)
17. District Magistrate, Singrauli, M.P. (for stone crushers and all private mines)
18. CMD, M/s NTPC Limited
19. CMD, M/s Lanco Anpara Power Pvt. Ltd.
20. CMD, M/s Hindalco Industries Ltd.
21. CMD, M/s UPRVUNL
22. CMD, M/s Grasim Industries Limited, Chemical Division, Renukoot, Sonbhadra
23. CMD, M/s Birla Carbon India Pvt. Ltd., Renukoot, Sonbhadra

Copy to:-

1. PPS to Secretary (EF&CC)
2. PPS to AS(NPG)
3. Guard File

**Minutes of the 5<sup>th</sup> meeting of Fly Ash Management and Utilization Mission held on 19.10.2023 at 11:00 AM**

The fifth meeting of 'Fly Ash Management and Utilization Mission' was convened on 19<sup>th</sup> October, 2023 at 11:00 AM to review the status of actions taken based on the recommendations/decisions made by the Mission in the meeting held on 04.7.2023. The list of participants is enclosed as Annexure I.

2. At the outset, Secretary welcomed all the participants. Addl. Secretary, MoEF&CC briefed about the recommendations/decisions made by the Mission in last meeting held on 04.07.2023.

3. A presentation was made by the Madhya Pradesh Pollution Control Board on the progress of implementation of various decisions of the Mission. The following details were presented:

(i) 5 Thermal Power Plants, 8 Coal mines (NCL), 56 Stone crushers, and 08 railway sidings (03 ECR; 03 ECR; 02 NCL) have submitted the action plans for implementation of pollution control measures. Periodical monitoring of action plans for TPPs, coal mines and Industries is carried out by the Board. Status of implementation of action plan and its progress has been shared with CPCB and also uploaded on MPPCB website.

(ii) Status of ash utilisation by 5 TPPs in Singrauli region of MP were presented:

TPP name	Year 2021-22		Year 2022-23		Year 2023-24 (till Sept.)	
	Generation of ash (L MT)	Utilisation (%)	Generation of ash (L MT)	Utilisation (%)	Generation of ash (L MT)	Utilisation (%)
NTPC Vindhyachal Singrauli	82.38	53.05%	76.64	37.31%	33.95	57.53%
Sasan Power Limited	53.47	52.35%	45.99	109.5%	23.85	99.1%
Mahan Energen Limited	8.36	25.46%	9.08	100.2%	6.68	117%

Jaypee Nigrie Super TPP Vill. Nigrie, Singrauli	15.79	89.55%	14.55	100.09%	9.22	86.48%
Hindalco Industries Ltd, Mahan Aluminium, Singrauli	11.54	85.55%	11.82	79.4%	5.69	134%
Total	171.54 LMT	56.96%	158.08 LMT	70%	79.4 LMT	83.87%

(iii) Status of utilisation of 15 thermal power plants (including TPPs in Singrauli) in Madhya Pradesh was presented:

Year	Ash generation (LMT)	Ash utilisation (LMT)	Utilisation (%)
FY 2021-22	285.12	176.99	62.07%
FY 2022-23	303.06	223.8	73.84%
FY 2023-24 (till Sept)	154.91	131.55	84.92%

(iv) Out of 303.06 LMT ash generation in FY 2022-23, 43.79 LMT ash utilized for backfilling in Gorbi pit and low lying areas, 10.32 LMT supplied to brick manufacturing and 70.41 LMT for others purposes.

(v) 04 Thermal Power Plants in MP have low utilisation levels of ash, namely NTPC Vindhyachal (57.53%), NTPC Gadarwara (65.31%), Sanjay Gandhi TPS, Umaria (63.95%), Amarkantak TPS, Chachai (78.8%) in FY 23-24 (up to September 2023)

(vi) MPPCB issued permissions for ash utilisation in low lying areas with total area of 750.9 ha in 62 sites with capacity more than 218.5 LMT out of which 86.96 ha was utilised in 22 sites by various thermal power plants and agencies.

(vii) NTPC Vindhyanchal informed that 70% of ash generated is supplied to NHAI projects. NTPC submitted a plan to reach utilisation of 81.16% by end of FY 2023-24 from the current utilisation of 57.33%.

(viii) Chief Secretary, Govt. of M.P. directed all the stakeholders viz. NHAI, PWD, MPRDC, MPBDC & Works Department to use ash based products/bricks within 300 km radius of TPPs.

(ix) Skilling and outreach programmes for training of SHGs have been conducted by District Collector Singrauli to promote manufacturing of ash based products/bricks.

(x) Principal Secretary, Env. Dept., GoMP reviewed the implementation of action plans and air quality improvement in Singrauli region on 13.09.2023 and following directions were issued:

- a. SECL was directed to allocate abandoned mine void of Sharda opencast mine Trap-T1 to Amarkantak TPS, Sanjay Gandhi TPS.
- b. Decision on permission for inter-state transportation of fly ash from TPPs to Gorbi mine will be taken on the basis of merits of the activity.
- c. Central Laboratory, Bhopal was directed to complete the study on mixing of red mud with fly ash in Gorbi mine.
- d. NTPC Vindhyanchal was directed to install dust control arrangements. Instructions were given to Sasan Power Plant for removal of fly ash from Thargatta and Garya drain and be verified by Oversight Committee.
- e. All TPPs in Singrauli were directed to complete all pending activities recommended by the Mission.
- f. NCL was directed to complete the feasibility study for mixing of 25% ash in overburden of mines by CIMFR.
- g. East Central Railway and West Central Railways Siding Managements were directed to take coal dust emission control measures. Further, it was directed to communicate Chairman, Railway Board regarding non-implementation of action plan.

(xi) The measures namely, adequate capacity of silos to store fly ash, transportation of ash by bulkers, facility for washing of wheels of transportation trucks, keeping pond ash in moist condition (about 15%), installing permanent sprinklers, road sweeping through mechanical sweepers have been ensured at TPPs to prevent fugitive dust from ash handling and storage activities.

(xii) Out of 56 stone crushers in Singrauli region, 48 stone crushers have installed dust containment system, 41 have constructed wind breaking wall and 48 have arrangements for regular cleaning and wetting system. Further, 8 stone crushers were closed by Collector, Singrauli due to non-compliance. MPPCB conducted monitoring near stone crushers and PM10 levels were found within norms.

(xiii) Air quality analysis has been carried out in the Singrauli region during Dec, 2021- Sept, 2022 and Dec, 2022-Sept, 2023. Air Quality Index (AQI) has marginally improved from 157 in 2021-22 to 130 in 2022-23. There has been significant improvement in air quality during July-September.

(xiv) Action plans were submitted by 01 TPP and 07 NCL coal mines including Municipal Corporation Singrauli (MCS) for bringing down CEPI score. CEPI score in Singrauli region was assessed by CPCB action plan calculated by CPCB (May, 2022) was 61.38 and 45.17 by MPPCB (Aug., 2023) which is out of severely polluted area category.

(xv) The following activities from the action plan of various industries in M.P have been reported under progress:

- M/s NTPC Vindhyachal STPP, Singrauli (13 units):
  - a. Installation of FGD for SO<sub>2</sub> in 12 units
  - b. NOX emission control measures
  - c. % increase in fly ash utilization
  - d. R&M for Unit-4 – Commissioning job
  - e. Installation of sprinklers at ash dyke V1, V2, V3A & V3B
  - f. Arrangement for 01 Mechanized cleaning machine
- M/s Sasan Power Limited
  - a. Installation of FGD for SO<sub>2</sub> removal
  - b. Construction of pipeline for ash transportation
  - c. Sprinkling system in ash dyke
  - d. Submission of NEERI Report for breach of ash dyke
- M/s Mahan Energen limited:
  - a. Installation of FGD for SO<sub>2</sub>
  - b. Development work of railway siding
  - c. Transportation by Merry go round
- M/s Hindalco Industries Ltd. Mahan, Aluminium, Bhargwan, Singrauli: Installation of FGD installation for SO<sub>2</sub> in Unit-1,2,3,4,5 and construction of RCC road

- Jaypee Nigrie Super Thermal Power Plant:
  - a. Installation of FGD for SO<sub>2</sub>
  - b. Verification of Ash dyke safety report
  - c. Permanent sprinkling system at fly ash dyke
- Northern Coalfields Ltd., Singrauli: Submission of report on study conducted by CIMFR on backfilling of fly ash in OB in Nigahi Mine by December 2023.
- NCL, Amlori Project: RCC approach road and set-up treated water storage tank of 10 lakh Lt capacity
- NCL, Nigahi: Set- up additional 10 MTPA CHP and construction of CC Road
- NCL, Jayant Project: CConstruction of sedimentation pond & Pump house and arrangement for truck mounted mist spray (01).
- NCL, Block-B Project:
  - a. 4.5 MT coal handling plant
  - b. Laying of roads
  - c. 02 new fixed fog machines
- NCL, Dudhichua Project
  - a. 10 MT Coal handling plant
  - b. Dudhichua sector A to Jayant tiraha road
  - c. Additional 08 nos. stationery fog canons
  - d. New ETP of capacity 30 MLD & New Bunds
- NCL, Bina ext.
  - a. Construction of CHP of 9.5 MTPA Capacity
  - b. WBM to RCC of 4.8 kms
  - c. 02 new fixed fog machines
  - d. ETP up gradation- No progress

- APMDC Ltd.-Sulyari Open Cast Project: Set-up of coal handling plant and 5.2 KM (500 m added) chainage work.
- Sasan Power Limited (Moher & Moher Amlohri extension coal mine):
  - a. Utilized approx 30,000 MT fly ash with OB dump since April-23 to June-23. Backfilling stopped due to monsoon.
  - b. Procure mist canon for dust suppression.
  - c. Rehabilitation and resettlement of affected people.
- Jaiprakash Power Ventures Ltd., Amelia (North) Coal Mine: Not agreed to use fly ash with OB dumps. Procurement of 10 no. fog cannons.
- THDC India Ltd., Amelia Coal Block (New mine):
  - a. Coal handling plant
  - b. Remaining 2.32 km road construction
  - c. Set-up ETP of 10 kl
- East Central Railway, Spur III & X
  - a. Fixed water sprinklers
  - b. Green belt
  - c. Work as per CPCB Guidelines
- East Central Railway, Mahedaiya
  - a. Fixed water sprinklers
  - b. Green belt
  - c. Work as per CPCB Guidelines
  - d. Wind breaking wall
  - e. Approach road
- West Central Railway: Gajra Bahra, Gondawali and Bargawan:
  - a. Dust Protection walls
  - b. Water sprinkling system or tankers

- c. Drainage facility
- d. A pucca circulating handling area
- e. All weather approach Road
- f. Green belt around the coal siding area

(xvi) MPPCB constituted a four-member Committee under the chairpersonship of District Collector of each District for identification and allotment of abandoned non-coal mines to TPPs.

4. A presentation was made by the UP Pollution Control Board on the progress of implementation of various decisions of the Mission. The following details were presented:

(i) Obra TPS and Anpara TPS of UPRVUNL, Shaktinagar TPS & Rihand Sagar TPS of NTPC, Renusagar TPP of Hindalco, Lanco Anpara TPP have submitted the 05-year action plan for 100% utilisation of ash.

(ii) 06 Thermal Power Plants in Sonbhadra region have furnished the 05-year action plan for 100% utilisation of ash:

- a. M/s UPRVUNL, Anpara TPS:
- b. M/s UPRVUNL, Obra TPS
- c. M/s NTPC Shaktinagar TPS.
- d. M/s NTPC Rihand Nagar.
- e. M/s Hindalco Industries Ltd. (Power Division), Renusagar, Sonbhadra.
- f. M/s Lanco Anpara Power Ltd., Anpara, Sonbhadra

(iii) Ash utilisation in Sonbhadra region by 06 Thermal Power Plants is presented as below:

Ash quantity/Year	2021-22	2022-23	2023-24 (till Sept.)
Total quantity of ash generation	15.11 LMT	16.19 LMT	8.06 LMT
Quantity of ash utilization	5.79 LMT	5.68 LMT	3.48 LMT
% utilization of ash	38.3%	35.1%	43.2%

(iv) Out of 5.7 LMT utilisation of ash in 2022-23, the majority of the quantity (3.5 LMT) is utilised in roads, flyover and other construction activities.

(v) NTPC informed that a project is undertaken to convert bottom ash into sand. The arrangements are made to segregate bottom ash and fly ash disposed in a pond so as to enable conversion of bottom ash in to sand.

(vi) UPRVUNL for Anpara TPP civil, mechanical and electrical contracts will be placed in a month. MPPCB issued permission for transportation of ash from Anpara TPP to Gorbi mine. The ash backfilling activities are expected to start by December, 2023.

(vii) Details of coal transportation by NCL mines is presented as below:

Mine name	Mode of transportation (%)		
	Rail	Road	Aerial Ropeway
Dudhichua	77.72%	18.4	3.9
Bina	69.41	30.6	-
Khadia	70.5	29.5	-
Krishanshila	53.9	12.9	33.2
Kakri	57.65	42.34	-
<b>Total</b>	70.36	23.74	5.9

(viii) An amount of 58,000 m<sup>3</sup> of deposited ash of Obra TPP (UPRVUNL) has been desilted from Renu/Rihand River and deposited in low lying areas in Obra Sector 2&3. Soil stabilization work of low lying areas has been completed and Miyawaki afforestation is carried out.

(ix) An amount of 206540.944 m<sup>3</sup> visible ash Anpara TPP (M/s UPRVUNL) from side pocket of Rihand Reservoir has been removed and filled in low lying areas. Stabilization of ash in low lying area with soil cover has been completed and plantation work is in progress.

(x) Presently, 31 Fly ash based brick manufacturing units are operational in Sonbhadra. To increase utilization of ash based products, UPPCB issued directions to Thermal Power Plant vide letter dated 09-05-2023 to submit action plan for utilization of fly ash as per Fly Ash Notification dated 31.12.2021 and monthly progress report to CPCB and UPPCB, and organize workshop to encourage manufacturing of Fly ash based Products.

(xi) Chairman, UPPCB directed different departments on 15.05.2023 for utilization of fly ash and fly ash based products within 300 Km radius of TPPs and to provide the progress report.

(xii) A workshop held on 07.10.2023 at UPRVUNL Obra, Sonbhadra to promote Ash Utilization in manufacturing of Fly Ash Bricks and in other sectors with Fly Ash Bricks Units, TPPs and District Administrative and SPCB.

(xiii) In regard to fugitive dust emissions from ash handling and transportation, the measures namely, storage of ash under covered sheds, transportation of dry fly ash in closed tankers, arrangement at TPPs for washing of wheels of the trucks transporting ash, transportation of pond ash within water conditioning (minimum moisture of 15%) have been taken by Thermal Power Plants.

(xiv) Out of 313 Stone crushers in Sonbhadra area, 215 stone crushers have adequate Air Pollution Control Systems (APCS) such as covered conveyer system, covered jaw crusher, water sprinkling arrangement, wind breaking wall, green belt, pucca roads. 98 Stone Crushers are yet to install adequate APCS. Board issued show cause notices to 98 nos. of stone crusher units U/s 31-A of Air Act 1981, on 28.06.2023, 22.09.2023 & 25.09.2023 in which APCS were not adequate. Out of 98 units, closure directions issued against 17 Nos. of stone crusher units.

(xv) No new stone crusher is allowed to be established in District Sonbhadra. To control the dust emission and increase visibility on the road in the evening, all stone crushers are directed to stop operation between 5.00 PM to 10.00 PM daily.

(xvi) Air quality was analysed in the Sonbhadra region to see the impact of implementation measures by various industries. PM10 levels have improved in 2022-23 as compared to the last year. PM10 levels are 131 ug/m<sup>3</sup> in 2022-23 (Upto Sept) as compared to 167.4 ug/m<sup>3</sup> in 2021-22. AQI is 135.2 in 2022-23 as compared to 141.04.

(xvii) To bring down the CEPI scores, Action Plans were prepared for restoration of Polluted river stretch of River Rihand, Stretch-Renukoot and River Son Stretch-Chopan. All industries generating effluents have installed ETP/STP for treatment of Industrial/Domestic effluents and are achieving ZLD. Domestic sewage of cities Renukoot and Pipari contribute to the organic load of the Rihand river. Directions issued to concerned ULBs for survey and inventorization of drains discharging in Rihand river.

(xviii) CPCB assessed CEPI Score for Sonbhadra region and was 67.88 in May, 2022. UPPCB has re-assessed the CEPI Score in August, 2023 and is at 49.2 which is out of severely polluted area category.

(xix) Voluntary Contribution Fund for environmental restoration and relief has been opened by D.M. Sonbhadra. D.M. Sonbhadra has to provide Action Plan for restoration of Environment of District Sonbhadra, which has to be submitted to Hon'ble NGT by UPPCB for permission of transfer of EC fund.

(xx) MoU is under execution with AIIMS Bhopal for Initiating the Public Health and Risk Impact Assessment study due to fly ash consisting of 3 projects whose duration of completion is 6 months to 2 years.

(xxi) MoU between M/s NCL Singrauli (M.P.) & M/s UPRVUNL-Anpara has been signed on 15th July, 2023 for backfilling fly ash generated from Anpara TPP in Gorbi Open Cast Abandoned Mine (Pit No.-03) of NCL Singrauli (M.P.). The estimated volume of void filled with acidic water is approximately 13 Million cubic meter (Gorbi Pit-3), which will be made available for filling with fly Ash. M/s NCL Singrauli (M.P.) has given consent to allow UPRVUNL-Anpara for filling of Fly ash in Pit-3 of abandoned Gorbi mines. Permission for road transport of fly ash to Gorbi mines is awaited from District Administration, Singrauli.

(xxii) UPPCB issued directions to Northern Coalfields Ltd, Sonbhadra on 09.05.2023 to submit action plan for back filling of ash in abandoned mines and conducting feasibility study for mixing of Fly ash in back filling of Live mines. UPPCB has directed on 21.06.2023 to 05 NCL Mines Projects, Sonbhadra to provide status of Back filling of live mines void with ash mixed with OB. Action plan of NCL is awaited.

(xxiii) Director, Geology and Mining Department, Govt. of U.P. on 16.10.2023 has shared the details of 10 abandoned mines in Sonbhadra (6 nos) and Jhansi (04 nos) region with TPPs for taking necessary steps for backfilling of ash.

(xxiv) To prevent fugitive dust emissions from mines and coal transportation, the measures namely, coal transportation by tarpaulin covered trucks, installation of CCTV camera at the mine exit for continuous monitoring of trucks, covered belt conveyor from coal crusher to rake loading point, water sprinkling measures at material transfer points, water sprinkling through truck mounted mist guns and mobile tankers for within mine premises are under taken by coal mines.

5. M/o Coal has presented the status of identification mines for taking up backfilling of ash or ash mixing with Overburden in mine voids.

i. Details of 10 new identified mines are presented as below:

a. SECL:

- o Dugga void (Volume: 170 LCuM) is filled with water.
- o Bishrampur mine void (Volume: 17 LCuM) is partly filled with water as well as prohibitory orders imposed by DGMS under Sec. 22A (2).

b. WCL: Dhorwasa OC (Volume: 100 LCuM) allocated to MAHAGENCO

c. CCL:

- Govindpur UG (Volume: 0.85 LCuM) allotted to DVC/STPS (Bottom ash could be filled for stowing)
  - Dakra (Volume: 214.5 LCuM) allotted to Patratu: Mine is currently running and will be available from year 2023-24.
  - Dakra-Bukbuka allocated to Hindalco Industries: available form year 2027-28.
  - New selected Dhori UG allocated to DVC (CTPS): after end of life of the mine
    - d. MCL: Jaganathpur OCP (Quarry VII) allocated to JTPS
    - e. NCL: Krishnashila allocated to NTPC Singaruli.
  - f. SCCL Medapalli OC (Volume: 2164.3 LCuM): mine void is 500 m away from Godavari river hence, no dumping of ash can be done.
- ii. Central level Working Group recommended the following mines to various TPPs in its meeting held on 21.9.2023:
- f. CIL-MCL mines, Jagannath OCP (Quarry VIII) to Jindal India Thermal Power Ltd.
  - g. CIL-CCL Dakra-Bukbuka mine to Hindalco Industries Ltd. (cogen Power Plant) for filling from FY 2027-28 onwards.
  - h. CIL-CCL New Selected Dhori UG mine to NTPC Singrauli after end of life of mine
  - i. CIL-NCL Grobi Pit 1 & 2 to NTPC (Singrauli TPS)
- iii. A meeting was held under AS, MoEF&CC on 04.09.2023 for finalization of SOPs. MoC was directed to finalize SOPs based on the recommendation of the Committee constituted by MoC within one month.
- iv. SOPs in regard to safety related issues in allocation of mines and backfilling of ash in opencast and underground (operational and abandoned) and mixing of ash with OB dump to be finalized by M/o Coal. A committee has been constituted comprising DGMS and representatives of MoP, NTPC and CIMFR.
- v. NTPC informed of the challenges faced for signing MoU with mining operators for backfilling of ash in abandoned mines such as paying of lease rent, obtaining permission from DGMS and depositing funds in escrow account.
6. DGMS informed that a Guidelines for scientific study in opencast mines under Regulation 106 (2) of Coal Mines Regulation, 2017 by DGMS (Tech.) has been issued vide

circular no. 03 dated 16.01.2020 all the mine owners/ agents/ managers of opencast working coal mines and was advised to conduct a mine specific scientific study in respect of slope stability and other parameters, before commencing opencast working and submit the report. Factor of safety 1.5 to be maintained for permanent & long standing slopes. No prior permission provisioned for dumping fly ash in overburden dumps. In case of underground mines, scientific study may be conducted and based on the report backfilling activities may be carried out. The following has been summarised:

- a. **U/g working mines:** ash filling in mine voids require scientific study as well as permission from Regional Director General of Mines. DGMS issues permission within a period of 3 months after the submission of requisite study.
  - b. **Opencast working mines:**
    - i. ash filling in mine voids require scientific study to be furnished to DGMS office. No permission from DGMS is required.
    - ii. Ash mixing with OB dumps: No study and permission is required. However, safety considerations such as Factor of Safety of 1.5 is to be maintained.
  - c. **Abandoned mines:** No study and permission is required from DGMS once the mine is abandoned and lease is handed over to State Government or concerned authority.
7. CPCB made presentation on action taken on the decisions made by the Mission in its last meeting held on 04.07.2023.
- i. Status of implementation of action plans by 18 TPPs/ coal mines/industries as verified by the Oversight Committees empowered by Hon'ble NGT in June, 2023 is presented below:
    - a. Lanco Anpara C and NTPC Rihand will install FGD by Dec., 2025 and Dec 2026, respectively.
    - b. Grasim Industries Ltd. Chemical Division, Renukoot to shift mercury bearing brine sludge from factory premises to TSDF. The matter is sub-judice before the Hon'ble Supreme Court and is presently under stay.
    - c. Partial implementation of action plan w.r.t. ZLD for domestic effluent and control of fugitive emissions by HINDALCO Aluminium Smelter.
    - d. 8 TPPs/ coal mines (NTPC Singrauli, Renuagar TPP, UPRVUNL Anpara TPS, UPRVUNL Obra TPS, NCL Dudhichuwa Mine, NCL Kakri Mine, NCL Khadia

Mine, Sasan Power Ltd.) have extended their tentative time limits for implementation of specific plans/points. NCL Bina and NCL Krishnashila yet to implement action plans within timeframe set earlier.

- e. NTPC Singrauli and Anpara TPS are implementing measures to completely stop the discharge of ash pond overflow/ wastewater into the Rihand reservoir. Obra TPS has stopped ash pond overflow water carrying ash into the Renu river.
  - f. The trucks transporting coal from coal mines to TPPs are covered with thin LDPE sheets/ green net only, instead of tarpaulin resulting spillages at several locations. Fine coal dust was found along public road (Auri Mode-Shakti Nagar) and the black powder is also visible on the houses built along the roadsides as well as vehicles parked.
- ii. Updated status of action taken on decisions of 1st, 2nd, and 3rd meetings of the Mission obtained from the stakeholders are as follows:

Meeting	No. of Decisions	Complied	Regular activities*	Time-bound/ Yet to comply**
1 <sup>st</sup>	11	7	3	1
2 <sup>nd</sup>	18	13	2	3
3 <sup>rd</sup>	23	12	4	7

\*All 9 decisions points repeated in 4th meeting's decisions

\*\*6 decisions points repeated in 4th meeting's decisions. Remaining 5 decisions points are related to health risk assessment studies (3), verification of desiltation of ash by UPRVUNL plants (1), cost-benefit analysis of compliance / non-compliance by TPPs (1)

8. NCL informed that it operates 10 opencast mines across U.P. and M.P. over 312 sq km area, all of which are adjacent to each other. Further, the feasibility study on utilising fly ash in the Nigahi operational mine of NCL by CIMFR, Dhanbad is underway. Physical and mechanical properties of pond ash (NTPC Vindhyanchal and Shaktinagar) and OB (Nigahi mine) were determined. Study in respect of mixing of ash with OB experimental dump and its affect on production due to ash disposal in running mines, overburden management are in

progress. Experimental dump will be filled in five phases with pond ash-OB mixture randomly in the ratio of 1:3. Report will be submitted in December, 2023.

9. Pollution control measures such as 44 fixed fog cannons, 20 tyre mounted cannons, 14 road sweeping machines and 173 mobile water sprinklers have been deployed in all NCL mines.

10. Hindalco industries requested for allocation of abandoned Makra stone pit, Obra aggregate stone quarry, Obra road pit no. 2 & 3 and Dalla stone quarry for backfilling of ash. Further, MPPCB was requested to grant the consent to use red mud to neutralize acidic water of Gorbi coal mine of NTPC.

11. It was informed that Hon'ble NGT (PB) O.A. 862/2022 order dated 25.11.2022 in the matter of Pankaj Kumar Mishra Vs Union of India & Ors. regarding control of air pollution caused by transportation of fly ash by TPPs located in Sonbhadra and Singrauli region and unregulated coal mining & stone crushers activities, constituted a Joint Committee comprising MoEF&CC, CPCB & SPCB and directed to furnish factual report within 3 months. The Committee inspected coal mines and TPPs during Feb., 2023 and filed Action Taken Report dated 21.04.2023 before NGT. Hon'ble NGT on 10.5.2023 directed to forward a copy of report dated 21.04.2023 to MoEF&CC for further action against violations reported & furnish the report. Following are the recommendations of Joint Committee as per Report dated 21.04.2023: -

- i. Truck/tippers cover of heavy duty such as 400GSM & more thickness and adequate in size to avoid fall of coal & ash on road during transport.
- ii. Night vision Pan-tilt-zoom CCTVs & lights at prominent locations along the roads used for transportation of coal & ash may jointly be established by Coal mines, TPPs and District Administration.
- iii. Device a mechanism to impose penalty on violation by the truckers/transporters.
- iv. Formulate a traffic management plan with emphasis on road safety on the prominent routes of coal & ash transportation.
- v. Vehicle engaged in transportation of fly ash & coal to have valid Pollution Under Check (PUC) certificate and a periodic check.
- vi. Engage mechanically designed vehicles to transport the wet ash.
- vii. Effective implementation of CPCB guideline on "disposal/utilization of Fly ash for reclamation of low-lying areas and in stowing of abandoned mines/quarries.
- viii. Nagar Nigam shall deploy mechanized road sweeping machines.

- ix. Short and long-term plan to create alternate/ separate roads for the coal/ fly ash transportation and for the commuting of the general public.
  - x. Construction of NH 39 should be completed at the earliest.
12. The following **recommendations were made during the meeting**:
- i. Effective implementation of the provisions of Ash Utilization Notification, 2021 for mandatory 100% utilisation of ash by TPPs must be ensured. Status in this regard may be presented in the next Mission meeting.

**(Action: Ministry of Power and CEA)**
  - ii. Details regarding total volume of mine voids and quantum of ash that can be utilised and quantum of ash that has been utilised so far in mine void filling and mixing of ash in OB dumps along with the list of mines approaching for closure of in 3-5 years may be shared.

**(Action: Ministry of Coal and Ministry of Mines)**
  - iii. Stipulation of specific provisions in Mine Closure Plan for enabling activities of backfilling of ash in available/ remaining mine void and mixing it with OB dumps.

**(Action: Ministry of Mines and Ministry of Coal)**
  - iv. Completion of feasibility study to assess the area/volume available for ash backfilling and mixing of ash in with OB of NCL mines at Nigahi operational mine by CIMFR within given timeframe. Findings of feasibility study of Nigahi operational mine to be presented during the next meeting of the Mission.

**(Action: Ministry of Coal and NCL)**
  - v. NCL to make a presentation in the next meeting of the Mission regarding action plan and status of mine closure in terms of reclamation and restoration of biodiversity for the abandoned mines.

**(Action: NCL)**
  - vi. Geo-tagging of Thermal Power Plants and Geo-tagging of mine voids may be undertaken.

**(Action: Ministry of Power and Ministry of Coal)**
  - vii. As recommended in the 4th meeting of the Mission, Standard Operating Procedures (SOPs) are to be prepared before the next meeting for the following:
    - a. SOP for allocation of mines in respect of safety and administrative related matters (both UG/OC, working as well as abandoned)

- b. SOP for signing of MoU between identified mines and TPPs
- c. SOP for carrying out feasibility studies for identification of mine voids or OB dumps mixing of ash with OB in operational mines.
- d. SOP for carrying of scientific studies for backfilling of ash in mine voids of working U/G and Opencast mines.

**(Action: Ministry of Coal and Ministry of Mines)**

- viii. M/o of Railways and Railway Board to be communicated for taking necessary air pollution control measures in respect of ECR (Mahadia) and WCR (Gajra Bahara, Gondawali and Bargawa) in Singrauli region of MP. Railway Board may be included as member of the Mission.

**(Action: MoEF&CC)**

- ix. Request of Hindalco TPP regarding allocation of abandoned stone quarry in Dala region may be forwarded to State Government and Committee for identification of mines under Ash Utilisation Notification, 2021.

**(Action: MoEF&CC)**

- x. CEPI score estimated by MPPCB and UPPCB in the Singrauli and Sonbhadra regions may be re-validated by CPCB.

**(Action: CPCB)**

- xi. An advisory may be issued to all SPCB/PCCs to circulate the latest technologies for adoption by Stone crushers for improved air pollution control measures.

**(Action: CPCB)**

- xii. Road map for value added products such as use of bottom ash/ fly ash as a substitute for sand, bottom ash use in concrete making in coastal infrastructure projects to be prepared in consultation with NTPC, National Test House and other stakeholders.

**(Action: CPCB)**

- xiii. Best available technologies/practices for ash based products to be prepared and made available on MoEFCC and CPCB website.

**(Action: CPCB)**

- xiv. Environmental compensation imposed on TPPs, coal mine, stone crushers in Singrauli and Sonbhadra to be monitored and action to be taken against non-compliance. Status in this regard may be shared in the next meeting.

**(Action: CPCB, UPPCB and MPPCB)**

- xv. Recommendations of Joint Committee as mentioned in the directions of Hon'ble NGT(PB) O.A. 862/2022 vide Order dated 25.11.2022 to be shared with MPPCB and UPPCB for submitting the details of action taken report regarding its compliance and implementation. All respective industries, TPPs, mines/ stone crushers and railway sidings to ensure the compliance of the recommendation of Joint Committee and submit the compliance report to respective SPCBs.

**(Action: CPCB, SPCBs and respective Industries/ stakeholders)**

- xvi. Abandoned mines which are not needed by TPPs and those completed backfilling activities may prepare plans for reclamation and restoration of biodiversity as part of mine closure plan and compliance of environmental clearance. Reclamation activities may be carried out under the supervision of State Forest Department.

**(Action: Dept. of Mines and Forest Dept., Govt. of MP and UP)**

- xvii. Ambient air quality monitoring in and around thermal power plants, coal mines and stone crushers may be conducted and base line data set of the same seasons collected over the past two years may be analysed. Continuous evaluation of CEPI Score of Singrauli and Sonbhadara region and compilation of data may be carried out to assess the progress made in respect of control of air pollution.

**(Action: State Govts. of U.P. and M.P., UPPCB and MPPCB, CPCB)**

- xviii. Study on mixing of red mud with ash and its environmental aspects may be conducted and the results may be shared with CPCB.

**(Action: State Govt. of M.P., MPPCB)**

- xix. Necessary directions shall be issued for covering the trucks with tarpaulin sheets for transportation of coal and ash by road and not to use thin LDPE sheets/ green net only to prevent spillage and fugitive emission of coal dust and fly ash during transportation.

**(Action: UPPCB and MPPCB)**

- xx. Identification of available low lying areas for disposal of ash by TPPs and monitoring of specific conditions stipulated in the consent granted for dumping of ash in it. Utilization of ash for filling allotted sites of low lying areas must be monitored through geo-tagging and/or Video monitoring. Ash disposed in low lying areas to be stabilized with soil cover and grass/ green belt.

**(Action: All TPPs, UPPCB and MPPCB)**

- xxi. Commencement of backfilling of ash in mine void of allotted Gorbi pit no. 3 by Anpara TPS by December, 2023. Progress in this regard may be shared with the concerned SPCB and CPCB.

**(Action: Anpara TPP, UPRVUNL, UPPCB)**

- xxii. All the pending/ ongoing activities in respect of implementation of decisions made during 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> meeting of the Mission shall be undertaken and action taken report shall be furnished. Progress to be updated on the website on monthly basis. Necessary formats may be put up on the website to enable all stakeholders to upload the progress online. Login and passwords for all stakeholders to be generated immediately.

**(Action: Concerned Ministry/ CPCB/ State Govts./ SPCBs/ Organisation)**

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**Annexure****List of Participants**

1. Smt. Leena Nandan, Secretary, EF&CC- Chairperson
2. Shri Tanmay Kumar, Chairman, CPCB
3. Shri Naresh Pal Gangwar, Additional Secretary, MoEFCC
4. Sh. Anandji Prasad, Advisor (Project), MoC
5. Sh. Piyush Singh, Joint Secretary (TD), MoP
6. Shri Tirupathi Reddy Kommidi, Additional Chief Manager, MoC
7. Shri N.K. Janoo, CCF, Forest Dept., Govt. of U.P., Meerut
8. Shri Swatantra Kumar Srivastava, Divisional Forest Officer, Forest Dept., GoU.P., Renukoot
9. Shri Chandra Mohan Thakur, MS, MPPCB
10. Shri Ajay K. Sharma, MS, UPPCB
11. Shri Ashutosh Kumar Dubey, ADM, Sonbhadra, U.P.
12. Shri Nazimuddin, Scientist F, CPCB
13. Shri N. Subrahmanyam, Scientist D, MoEFCC
14. Shri Mohammed Niyazi, Dir. (S&T), DGMS
15. Shri Kamal Kumar Jangid , Director, CEA
16. Shri P.S. Mohan Kumar, Deputy Director, CEA
17. Shri Tarun Kumar, Deputy Director, CEA, MoP
18. Shri Ranjeet Nirmal, District Mining Officer (GB Nagar), Directorate of Geology and Mining, GoUP.
19. Shri Rajendra Singh, AE, CD-3, PWD, Ghaziabad
20. Shri Mukesh Srivastava, RO, MPPCB, Singrauli
21. Shri R.K. Gupta, Superintending Engineer, MPPCB
22. Shri Gaurav Gahlot, Scientist C, CPCB
23. Shri Ramesh Babu, Director (Operations), NTPC
24. Shri S.K. Takhele, CGM (SSEA), NTPC
25. Shri G., Rajashekar, GM (AMG), NTPC
26. Shri Ashwani Tyagi, DGM, NTPC
27. Shri A.K. Samaiyar, ED, NTPC
28. Shri M.M. Mishra, Advisor, NCL, Singrauli
29. Shri Sanjeev Kumar, GM (Env. & Forest), NCL
30. Shri Dinkar Tiwari, DM, NCL

31. Shri Sunil Prasad Singh, DT (NCL), CIL
32. Shri S.K. Dutta, Director (Technology), UPRVUNL
33. Shri Anand Kumar, Chief Engineer, UPRVUNL
34. Shri Ravikant Raut, Chief Chemist, MPPGCL
35. Smt. Rehana Beg, Resident Engineer, MPPGCL
36. Shri Ravikant Raut, Chief Chemist, MPPGCL
37. Shri Himanshu Verma, Sr. Manager, Lanco Anpara Power Ltd.
38. Shri Harshal Ambulkar, Vice-President, Grasim Industries Ltd.
39. Shri L.K. Dutta, Vice-President, Grasim Industries Ltd.
40. Dr. Vinay Kumar Yadav, AGM (Environment), Grasim Industries Ltd., Renukoot
41. Dr. Vinod K. Verma, Head Regulatory Affairs, Hindalco Industries
42. Smt. Vaishali Surawar, Hindalco Industries
43. Shri Sayed M Islam, Sr. Manager, Birla Carbon Industries Pvt. Ltd.
44. Shri Abhishek Singh, Manager, Greater Noida Authority
45. Shri Rajeev Sharma, AE, MPIDC, Bhopal
46. Dr. Sujit Kumar Mandal, Chief Scientist, CSIR-CIMFR, Dhanbad
47. Shri Prashant, CSIR-CIMFR, Dhanbad
48. Shri Durgananda Jha, SRF, CPCB
49. Shri Avneesh Kumar Chauhan
50. Shri Vinay Ramaiya
51. Shri Mukesh Mittal

**F. No. 11/3/2018- HSMD**  
**Government of India**  
**Ministry of Environment, Forest & Climate Change**  
**(HSM Division)**

Indira Paryavaran Bhawan  
Jor Bag Road, Aliganj  
New Delhi – 110003

Date: 30<sup>th</sup> November, 2023

**OFFICE MEMORANDUM**

**Sub.: Fly Ash Management and Utilization Mission- reg.**

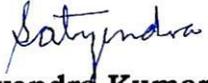
The undersigned is directed to refer the MoEF&CC vide letter dated 09.03.2022 (copy enclosed at Annexure I) regarding constitution of Fly Ash Management and Utilisation Mission and minutes of the 5<sup>th</sup> meeting of the Mission held on 19.10.2023 in respect to industrial pollution in Singrauli and Sonbhadra region of M.P. and U.P., respectively. A copy of minutes of the 5<sup>th</sup> meeting of the Mission is enclosed at Annexure II.

2. In the 5<sup>th</sup> meeting of the Mission held on 19.10.2023, the matter regarding air pollution control measures undertaken at railway sidings of West Central Railway and East Central Railway was reviewed. In this regard, it was recommended that Chairman, Railway Board be requested to nominate an officer as a member of the Mission.
3. In view of the above, it is kindly requested to nominate an officer as a member of the Fly Ash Management and Utilisation Mission.

This issues with the approval of the Competent Authority.

**Encl.:** As stated

Yours sincerely,

  
**(Dr. Satyendra Kumar)**

Director

Ph: 011-20819291

Email: satyendra.kumar07@nic.in

To:

Chairman & CEO (Railway Board), Ministry of Railways, Rail Bhavan, Raisina Road, New Delhi - 110001

Copt to:

1. Secretary (Coal), Ministry of Coal, New Delhi
2. Secretary (Power), Ministry of Power, New Delhi
3. Secretary (Mines), Ministry of Mines, New Delhi
4. Chief Secretary, State of Uttar Pradesh
5. Chief Secretary, State of Madhya Pradesh
6. Chairman, CPCB, New Delhi
7. Additional Chief Secretary/Principal Secretary, Energy, Government of Uttar Pradesh
8. Additional Chief Secretary/Principal Secretary, Energy, Government of Madhya Pradesh
9. Additional Chief Secretary/Principal Secretary, Industries, Government of Uttar Pradesh
10. Additional Chief Secretary/Principal Secretary, Industries, Government of Madhya Pradesh
11. Director General, Directorate General of Mines Safety, Jharkhand
12. Additional Chief Secretary/Principal Secretary, Environment Department, Government of Madhya Pradesh
13. Additional Chief Secretary/Principal Secretary, Environment Department, Government of Uttar Pradesh
14. Chairman, UPPCB, Uttar Pradesh
15. Chairman, MPPCB, Madhya Pradesh
16. District Magistrate, Sonbhadra, U.P. (for stone crushers and all private mines)
17. District Magistrate, Singrauli, M.P. (for stone crushers and all private mines)
18. CMD, M/s NTPC Limited
19. CMD, M/s Lanco Anpara Power Pvt. Ltd.
20. CMD, M/s Hindalco Industries Ltd.
21. CMD, M/s UPRVUNL
22. CMD, M/s Grasim Industries Limited, Chemical Division, Renukoot, Sonbhadra
23. CMD, M/s Birla Carbon India Pvt. Ltd., Renukoot, Sonbhadra
24. PPS to AS(NPG)
25. Guard file