

## CHAPTER 4

### AIR POLLUTION & CONTROL MEASURES

In coal mines, air pollution starts with removal of massive overburden<sup>7</sup> (OB) which discharges fine particles. It is followed by drilling/ extraction of coal and movement of extracted coal to the washery/ crusher/ Coal Handling Plant (CHP)<sup>8</sup> and finally transportation of coal to the consumer. These operations generate Suspended Particulate Matter (PM<sub>10</sub>) and Respirable Particulate Matter (PM<sub>2.5</sub>) in the surroundings which are the main sources of air pollution. Emissions of some fugitive gases like carbon dioxide, carbon monoxide, sulphur dioxide and oxides of nitrogen are also caused by automotive, generators and blasting operations.

Various means used by the coal companies to reduce air pollution are installation of monitoring stations to assess the level of pollutants in the air, installation of CHP, piped conveyor belt system, use of SILO for rapid and dust free loading of coal into wagons, installation of Merry-Go-Round, dust suppression by water sprinklers, mist blowers, mechanical brooming, plantation of trees along the route of transportation *etc.*

#### 4.1 Inadequate / absence of air quality monitoring stations

**4.1.1** According to the EIA – EMP of the mines, requisite number of air quality monitoring stations (AQMS) as specified in EC were to be established in core zone (within 3 km of the mining area) and buffer zone (within 10 km of the mining area) of each mine/washery for monitoring air quality. While granting EC, MoEF&CC also affirmed the proposals contained in EIA-EMP.

Out of the 28 sampled (operating) mines and 2 washeries, we observed that in 12 mines/washerries of three subsidiaries, against 96 monitoring stations to be established, only 58 monitoring stations (60 *per cent*) were established as detailed below, thereby rendering the process of air quality monitoring ineffective.

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<sup>7</sup> Overburden is the natural rock and soil that sits above and around the ore body

<sup>8</sup> Coal Handling Plant (CHP) is the facility used in the coal mining industry for crushing, cleaning and transportation of coal.

**Table 02: Status of installation of Air Quality Monitoring Stations**

Company	No. of mines/washeries	No. of monitoring stations to be installed			No. of monitoring stations actually installed			Shortfall		
		Core Zone	Buffer Zone	Total	Core Zone	Buffer Zone	Total	Core Zone	Buffer Zone	Total
CCL	5 <sup>9</sup>	20	20	40	4	16	20	16	4	20
SECL	4 <sup>10</sup>	16	16	32	11	15	26	5	1	6
WCL	3 <sup>11</sup>	12	12	24	6	6	12	6	6	12
<b>TOTAL</b>	<b>12</b>	<b>48</b>	<b>48</b>	<b>96</b>	<b>21</b>	<b>37</b>	<b>58</b>	<b>27</b>	<b>11</b>	<b>38</b>

The subsidiaries attributed (November 2018) the shortfall to overlapping monitoring stations wherein the core zone of one project could fall within the buffer zone of adjacent project. While endorsing the above views of the management, the Ministry also stated (April 2019) that as per Standard EC conditions and EIA Guidance Manual for Mining of Minerals of MoEF&CC, sampling stations are fixed in core zone and in buffer zone based on environmentally and ecologically sensitive receptors in consultation with concerned SPCB and that this gave a fairly representative picture of pollution generation in the core zone and impact on the surrounding.

While admitting the contentions of the Ministry that monitoring stations are installed based on standard EC conditions and guidelines of MoEF&CC in consultation with concerned SPCB, the fact remains that audit highlighted only those instances where the number of monitoring stations required to be installed as per the approved EC conditions of MoEF&CC differ with the monitoring stations actually installed in the sample mines.

In the Exit Conference, the Ministry stated (May 2019) that the recent ECs have not indicated regarding number of monitoring stations to be set up and these were installed based on consultation with the concerned SPCB, which grants Consent to Operate (CTO) to the respective mines on annual basis.

Audit observed that EC was not revised to reflect the reduced requirement of monitoring stations due to overlapping of core and buffer zones.. Besides, in absence of necessary records made available to Audit, it could not be substantiated that the number of monitoring stations were established in concurrence with the requirements of SPCBs for the particular projects during 2013-18.

<sup>9</sup> Piparwar OC, Rajrappa OC, Kathara OC, AKK OC and Kathara Washery

<sup>10</sup> Gevra, Kusmunda, Baroud, Rajendra,

<sup>11</sup> New Majri IIA, Penganga, Gokul,

Audit observations mentioned above are restricted to the sampled mines only. CIL subsidiaries need to review the position internally regarding installation of AQMS in all other mines under their operation to comply with the EC conditions and control air pollution.

#### 4.2 Absence of Continuous Ambient Air Quality Monitoring Stations in some mines

With a view to strengthen the monitoring mechanism for effective compliance through self-regulatory mechanism, the SPCBs exercising jurisdictional control over the mines of the subsidiaries, directed while issuing the certificate of CTE / CTO or its renewal from time to time, that Continuous Ambient Air Quality Monitoring Stations (CAAQMS) be installed. The CAAQMS were to be equipped with connectivity to the server of SPCBs to facilitate online monitoring of ambient air quality.

We observed that out of 28 operating mines taken up for detailed scrutiny, 12 mines of four subsidiaries did not comply with these directives as detailed below:

**Table 03: Status of installation of CAAQMS in the mines of subsidiaries**

Subsidiary	Directives issued		Mines that did not comply with the directives
	By	In	
ECL	Jharkhand State Pollution Control Board (JSPCB)	August 2014/ January 2017	Rajmahal OCP
NCL	Madhya Pradesh Pollution Control Board (MPPCB)	December 2013	Nigahi, Jayant, Block-B, Khadia mines
MCL	Orissa State Pollution Control Board (OSPCB)	July/ September 2016	Bharatpur OCP, Lingaraj OCP, Lakhanpur OCP and Basundhara (W) OCP
WCL	Maharashtra Pollution Control Board (MPCB)	October 2015/ March 2017/ August 2017	Penganga OC, Majri II A OC and Gokul OC

ECL stated (November 2018) that action was on hand to adhere to these stipulations. We observed that the process in ECL was mired in administrative delay.

Although the procurement of CAAQMS was approved (March 2017) by NCL, it placed orders for their supply only in September 2018, attributing the delay to implementation of Goods & Services Tax (GST). We observed that there was time lag of 42 months from the issue (December 2013) of directives by MPPCB for installation of CAAQMS and the roll out (July 2017) of GST, and, hence, the delay attributed to implementation of GST is not tenable. We also observed that after a lapse of 18 months from the date of approval of the proposal, MCL retained (March 2018) CMPDIL as consultants for the work relating to procurement, maintenance and monitoring of CAAQMS for a consideration of ₹ 19.88 crore without following the tender process, which was

financially imprudent. The avoidable delay in initiating action for procurement of CAAQMS by 60 months is a pointer to deficiency in monitoring.

WCL stated (November 2018) that action was on hand to install CAAQMS as directed. Further developments are awaited (November 2018).

Thus, absence of CAAQMS is a pointer to the fact that scope existed for further strengthening of monitoring mechanism for effective compliance through self-regulatory mechanism.

Audit observations mentioned above are restricted to the sampled mines only. CIL subsidiaries need to review the position internally regarding installation of CAAQMS in all other mines under their operation to comply with the EC conditions and control air pollution.

### **4.3 Beneficiation of coal: non-establishment of washeries in MCL**

MoEF&CC mandated (January 2014) that coal based thermal power plants be supplied with coal having ash content not exceeding 34 *per cent*. The coal companies were also advised (April 2015) to adhere to this stipulation. Beneficiation of coal was to be taken up for reduction of ash content. It involves washing of coal through a washery which produces clean coal by separation of ash or extraneous material as well as associated impurities like shale, sand, stones *etc.* of the raw coal.

We observed that the ash content in the coal supplied by ECL and NCL was less than 34 *per cent*. Therefore, beneficiation of coal in respect of ECL and NCL is not required. In case of mines of MCL i.e. Hingula, Jagannath, Basundhara (W) and IB Valley mines, average ash content in coal ranged between 40.1 *per cent* and 43.8 *per cent*. Though MCL contemplated setting of four washeries as early as in March 2008 for supply of beneficiated<sup>12</sup> coal to thermal plants, these have not been commissioned so far (November 2018). The delay was due to belated receipt of forest clearance and EC for setting up of washeries, besides delay in firming up the method of project financing.. MCL stated (November 2018) that action was on hand to establish the washeries as contemplated. Further developments are awaited (November 2018).

It was observed that in the sample mines of CCL the ash content exceeded 34 *per cent* despite beneficiation of coal carried out in its washeries. Relevant information/ records relating to other subsidiaries (BCCL, SECL and WCL) were not made available to audit till date.

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<sup>12</sup> Beneficiated coal means coal containing higher calorific value but lower ash than the original ash content in the raw coal obtained through physical separation or washing process.

#### 4.4 Deviation from the prescribed standards

The National Ambient Air Quality Standards, 2009, (NAAQS) notified by MoEF&CC in November 2009 mandated monitoring of PM<sub>10</sub> and PM<sub>2.5</sub> on annual basis and on 24 hours basis. The monitoring is carried out by the seven subsidiaries of CIL through the RIs of CMPDIL.

**4.4.1** Although these norms came into effect from November 2009, ambient air quality was monitored in all the seven subsidiaries except ECL, which started monitoring only from May 2015 for their cluster of mines<sup>13</sup>. Further, ECL monitored the ambient air quality of the standalone projects only from September 2016.

**4.4.2** We observed that six locations of ECL at Sonapur Bazari (two), Kunustoria (one) and Jhanjra (three) were monitored only till March 2015 and discontinued thereafter on the plea that the monitoring stations were rationalised to reflect the entire cluster. The monitoring in the stations should not have been discontinued as PM<sub>10</sub> level in these stations always exceeded the prescribed norm (100 µg/cum<sup>14</sup>) under NAAQS as detailed below:

**Table 04: Monitoring of air pollution discontinued at ECL Mines**

Sl. No.	Mine	Name of monitoring Station	Period of monitoring	Level of PM <sub>10</sub> in excess level prescribed in NAAQS (per cent)
1.	Sonapur Bazari	Training Centre	May 2013 to February 2015	100
		CISF Camp		56
2.	Kunustoria	Incline No. 3	April 2013 to March 2015	100
3.	Jhanjra	MIC	September 2013 to February 2015	100
		1 & 2 Incline		100
		3 & 4 Incline		100

We also observed that ECL did not analyse the pollution levels in these locations post-rationalization for their conformity with the prescribed norms.

**4.4.3** NAAQS prescribed the maximum permissible level of emissions of PM<sub>10</sub> (100 µg/cum) and PM<sub>2.5</sub> (60 µg/cum) concentration in industrial, residential, rural and other areas. We observed that the concentration of PM<sub>10</sub> and PM<sub>2.5</sub> in air exceeded the levels prescribed in NAAQS in six mines across three subsidiaries during 2013-18 as detailed below:

<sup>13</sup> A group of mines in close proximity to one another

<sup>14</sup> Micrograms per cubic metre

**Table 05: Levels of air pollutant in the mines of subsidiaries**

Subsidiary	Pollutant	No. of occasions monitored	Range of actual levels recorded ( $\mu\text{g}/\text{cum}$ )	Readings in excess of the specified standards		
				No. of occasions	Per centage of (5) to (3)	Mines
(1)	(2)	(3)	(4)	(5)	(6)	(7)
BCCL	PM <sub>10</sub>	130	101 to 660	64	49	Dahibari-Bansantimata OCP and Moonidih UG
	PM <sub>2.5</sub>	130	61 to 480	57	44	
ECL	PM <sub>10</sub>	107	101 to 196	67	63	Rajmahal
WCL	PM <sub>10</sub>	823	101 to 647	260	32	New Majri IIA OC, Gokul OC and Penganga OC
	PM <sub>2.5</sub>	411	61 to 228	65	16	

We did not come across instances of breach of the permitted levels in 22 other sampled operating mines.

We observed that the subsidiaries monitored the parameters through Routine Environment Monitoring (REM) reports without analyzing the reasons for variation of the parameters as against the standards fixed, for remedial action. We also observed that in case of WCL, Maharashtra Pollution Control Board (MPCB) forfeited (between September 2013 and September 2016) bank guarantee (BG) amounting to ₹ 32.5 lakh tendered by them, for exceeding ambient air quality norms during the period 2013-18. Yet, no action was taken to reduce emission levels. BCCL attributed (November 2018) the pollution at Dahibari OCP (DBOCP) in excess of the norms to vehicular movement on National Highway 19.

WCL confirmed (November 2018) that the levels exceeded in buffer zone which were beyond their control. However, this was not assessed further for necessary action.

ECL stated (December 2018) that monitoring was done as per the Standards of GSR 742 (E) dated September, 2000, issued by MoEF&CC.

The Ministry also stated (April 2019) that air quality of core zone is being monitored as per Notification No. GSR 742(E) dated 25 September 2000 as prescribed in Clause (i) of Air quality Monitoring and Preservation of the Standard EC conditions prescribed by MoEF&CC. As per the aforesaid notifications, if any residential or commercial or industrial place falls within 500 metres of any dust generating sources, NAAQS notified becomes applicable. The receptors in buffer zone are being monitored for the parameters of NAAQS, 2009 as specified in Standard EC Conditions of MoEF&CC.

The reply of the Management/Ministry is not acceptable in view of the fact that as per the provision of the Air (Prevention and Control of Pollution) Act, 1981, the CPCB

notified NAAQS in 2009 which aimed to provide uniform air quality for all, irrespective of land use pattern, across the country. Further, the guidelines issued (March 2014) by CIL reiterated that the standards prescribed in NAAQS be complied with.

In the Exit Conference (May 2019), it was agreed upon to revisit the existing CIL guidelines for necessary modification regarding implementation of NAAQS 2009, in totality, for core as well as buffer zone.

**4.4.4** EC issued (between February 2013 and December 2013) for clusters of mines of BCCL stipulated that Source Apportionment Study and Mineralogical Composition Study (Study) be conducted for Jharia coalfield in order to ascertain the source and extent of air pollution due to mining activities so that appropriate mitigating measures could be taken. These Studies are undertaken by Government research agencies on receipt of advance by them as consideration for services.

We observed that the proposal for conducting these studies received from National Environmental Engineering Research Institute (NEERI) as early as in September 2013 followed by in January 2014 for a consideration of ₹ 1.12 crore was not acted upon. We further observed that the study was entrusted to the same agency, *i.e.*, NEERI, only in May 2018 for enhanced consideration of ₹ 1.42 crore and to submit the report within 12 months. This resulted in delay ranging between 53 and 64 months.

BCCL stated (November 2018) that action could not be initiated as no response was received to their tenders floated originally. The reply is not tenable as not only was the original tender floated late (in January / March 2015) but also the clause relating to advance payment for undertaking the Study was not incorporated in the tender notification, thereby forcing the Government research agencies to abstain from participating in the tender. The belated award of work to NEERI resulted in corresponding delay in initiating the process of remedial measures.

## **4.5 Transportation of coal**

Coal after excavation in the mine is transferred to the pit head stock, which is then transferred to crusher/ washery by dumper/ truck. The coal from the crusher/washery is transferred to the customers either by road (truck) or rail. Transportation by road generates a lot of air pollutants for which EMP emphasised the need to minimise road transportation.

As per CIL guidelines prescribed (March 2014), for mitigating air pollution, generation of dust is to be controlled at the source with necessary measures *viz.*, CHP, piped conveyor belt system, SILO including Rapid Loading System, Merry-Go-Round<sup>15</sup>, dust

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<sup>15</sup> The Merry-Go-Round (MGR) system is a closed-circuit dedicated rail transportation system between the production and consumption points.

suppression by water sprinklers, mist blowers, mechanical brooming *etc.* Further, dust generation is to be minimised along coal / waste transportation roads and green belt is to be created around the source of dust.

## 4.6 Violation of guidelines

4.6.1 During the course of joint inspection of mines, we observed the following shortcomings in the implementation of the guidelines in 17 out of the 28 operating mines selected for scrutiny.

**Table 06: Status of Implementation of CIL Guidelines in the mines of subsidiaries**

Sl. No.	Parameter indicated in the Guidelines	Non-adherence observed		
		Subsidiary	Mines	Percentage (%) of mines that failed to adhere with reference to sampled mines <sup>16</sup>
1	Use of covered conveyer belt / system for transporting coal from mines to railway siding / washery for reducing air pollution	ECL	Sonepur Bazari, Kunustoria, Dabor and Jhanjra	80
		CCL	Rajrappa OCM	25
		MCL	Lingaraj and Bharatpur	50
		SECL	Gevra OCM	25
2	Use of silos for rapid and dust free loading of coal into wagons	ECL	Jhanjra and Sonepur Bazari.	40
3	Wetting of top surface of coal loaded trucks by sprinklers / mist sprays for dust suppression	WCL	Majri IIA, Penganga and Gokul mines	100
4	Use of fixed sprinkler for dust suppression at railway siding	ECL	Sonepur Bazari and Kunustoria	40
		CCL	Jarangdih railway siding of AKK OCM and Kathara OCM	50
		MCL	Lakhanpur and Basundhara (W)	50
5	Use of mechanical brooming / industrial cleaner to suppress dust	ECL	Rajmahal, Jhanjra, Sonepur Bazari, Kunustoria and Dabor	100
		CCL	Piparwar OCM	25
		WCL	Majri IIA, Penganga OC, and Gokul mines	100
		MCL	Bharatpur, Lakhanpur and Basundhara (W)	75
6	Plantation at railway siding / stockyard / approach roads to reduce air pollution	MCL	Lakhanpur and Basundhara (W)	50
		CCL	AKK OCM	25
		WCL	Penganga and Gokul mines	67

<sup>16</sup> BCCL=4, CCL= 4, ECL= 5, MCL= 4, NCL= 4, SECL= 4 and WCL=3.



Pic. 01: Para No. 4.6.1, Table No. 06, Sl. No. 01: Un-covered conveyor belt at CHP in Lingraj Mine of MCL



Pic. 02: Covered conveyor belt at CHP in Mungoli mine of WCL



Pic. 03: Para No. 4.6.1, Table No. 06, Sl. No. 04: Jarangdih Railway siding of CCL without fixed sprinklers



Pic. 04: Ghugus Railway siding of WCL with fixed sprinklers

As regards the reasons for various shortcomings in implementation of CIL guidelines, Audit observed the following:

- The old damaged GI sheets of the covered conveyor system of Lingaraj and Bharatpur mines of MCL required replacement. Damaged sprinklers of Lakhanpur mine of MCL was under repair and a proposal was initiated for fixed sprinkler at Basundhara (W). For suppression of dust in the mines of MCL, a proposal for filters required for road sweeper machine of Bharatpur had been initiated. The plantation along the railway siding at Basundhara(W) and Lakhanpur mines of MCL was at proposal stage.
- In Dabor and Kunustoria mines of ECL, being small in size, conveyor belt was not installed, although management assured that study would be made for construction of silos with conveyor belt system for catering such small mines at a

centralized place based on the road connectivity. Further, installation of silos (12 MTY) and conveyor belt system for rapid and dust free loading of coal was under process at Sonepur Bazari and Jhanjra mines of ECL. It was also observed that the project for construction of CHP with silo facility at Sonepur Bazari mines, conceived as early as in May 2013 did not materialise so far (November 2018) due to delay in finalizing technical and financial parameters and coal continued to be transported by road disregarding stipulations in the EC. Fixed sprinklers for dust suppression at railway sidings of Sonepur Bazari and Kunustoria mines of ECL were under construction and management assured that the possibility of provision of mechanical brooming in the coal mining area of ECL would be explored.

- In case of Rajrappa mine of CCL, the washery was in close proximity and hence transportation of coal from mine to washery through belt conveyor was not techno-economically feasible. Further, for dust suppression, water was sprinkled regularly through mobile water sprinklers at washery and sidings at AKK and Kathara mines of CCL and management assured that the suitability of mechanical brooming at Piparwar mine would be assessed based upon experience of other coal companies before its deployment in CCL. It was also observed that the subsidiary assured for three tier plantation at railway siding at AKK mine.
- In Gevra mine of SECL, departmental issues/site constraints were responsible for delay in commissioning of conveyor system.
- In WCL, coal transportation trucks were covered completely by tarpaulin and thus arrangement of wetting of top surface of coal loaded trucks by sprinklers for dust suppression did not exist in all the mines of WCL. For use of mechanical brooming/ industrial cleaner to suppress dust, three mechanical sweeping machines had been procured and deployed at Chandrapur, Wani North and Nagpur mines of WCL and procurement for other mines was under process. Three-tier plantation was under process at Penganga and Gokul mines of WCL.

The coal subsidiaries accepted (October/November 2018) the audit observations and stated that corrective actions would be taken.

**4.6.2** While granting EC to Lakhanpur, Bharatpur and Basundhara (W) projects of MCL, MoEF&CC specified (July 2008, October 2008 and February 2013) that mist blower be commissioned. Further, MCL was to operationalise mist spray system of water for control of air borne dust at different loading and transportation points. We observed that MCL did not comply with these directives (November 2018) on the plea that the technology was the latest and that it did not have the expertise for procurement,

operation and maintenance of such machines. The reply is not tenable as the technology was adopted by WCL as early as in February 2015 and MCL could have replicated it. We further observed that considerable time (29 months) lapsed in evaluating the proposal of hiring *vis-a-vis* procurement, which was avoidable.

#### **4.7 Delay in commissioning rapid loading system**

Transportation of coal to consumers and from mine to washery / siding through piped conveyor and wagon loading through silo reduces dust pollution. There were shortcomings in adherence as detailed below:

**4.7.1** While granting EC for the expansions of Piparwar OCM of CCL, the MoEF&CC stipulated (2007, 2012 and 2014) that a rapid loading system<sup>17</sup> (RLS) consisting of railway siding and silo be constructed with adequate dust suppression arrangements in a time bound manner so as to replace transportation of coal by road. We observed that although the silo was constructed in April 1997, the work relating to the railway siding was completed belatedly and the RLS was commissioned only in June 2018. The delay was attributed to delay in initiating the process of land acquisition for construction of the railway siding and lack of effective follow-up action by the Management with the State/District administrative authorities for physical possession of land.

Meanwhile, due to absence of RLS, coal was transported by road to Bachara siding (involving a distance of 10 kilometres) from Piparwar till June 2018. The mitigative measures put in place for handling air pollution were thus not commensurate to handle the level of pollution as the EMP of the project was based on the premise that coal would be transported by rail, while it was actually transported by road till June 2018.

#### **4.8 Delay in firming up tender for capacity augmentation**

**4.8.1** Initially, Jayant project of NCL was sanctioned for 10 million tonne per year (MTY) capacity and accordingly CHP for the same capacity was in operation in the project. Later on, expansion of the project to the capacity of 15 MTY was approved (June 2008) by NCL Board. While according approval of expansion project, MoEF&CC stipulated (December 2008) that coal be transported by MGR with silo loading facility only. This necessitated construction of a new CHP of 5 MTY incremental capacity to match the production capacity of the mine. Madhya Pradesh Pollution Control Board (MPPCB), quoting National Green Tribunal (NGT) directives, directed (April 2016) NCL to discontinue coal transport by road. Notwithstanding these directives, quantities to the extent of 21 *per cent* and 23 *per cent* of its supply

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<sup>17</sup> RLS(Rapid Loading System) is the facility used in the coal industry for quick loading of coal into the wagons/trucks.

were transported to Morwa siding by road during the years 2016-17 and 2017-18 respectively. We observed that NCL was forced to resort to road transport as the tender for capacity augmentation of CHP from 10 MTY to 15 MTY was cancelled (2012) on the plea that the quotations received were too low as compared to the estimated cost put to the tender. Subsequently, NCL Board approved (March 2016) the expansion of Jayant project to 25 MTY, leading to a gap of 15 MTY in the capacity of CHP as compared to the then existing capacity.

NCL stated (October 2018) that consequent to augmentation of mine capacity to 25 MTY, it was decided to construct CHP with a capacity to handle 25 MTY and that action was on hand to prepare tender documents for the same. However, delay of over six years (between 2012 and 2018) in firming up the tender was not justified and coal continued to be transported by road disregarding stipulations in the EC, thereby contributing to pollution.

#### **4.9 Idling of infrastructural facilities**

For minimizing air pollution, coal is to be transported by rail with silo as mandated in the EC issued by MoEF&CC to the projects from time to time. To minimise costs and to maximise benefits, it is imperative that idling of facilities created be avoided, by synchronizing the pace of progress of construction of silos with that of the progress of work relating to railway line. We observed the following shortcomings in project management which resulted in idling of facilities created at cost of ₹ 742.42 crore.

**4.9.1** While granting EC for Gevra expansion project of SECL, MoEF&CC stipulated (June 2009) that the extracted coal be supplied by rail / MGR to consumers. Accordingly, work relating to railway siding with silo loading facility which was under execution by RITES Limited, was to be completed by July 2010. We observed that though construction of silo was completed belatedly in February 2016 at a cost of ₹ 138.85 crore, works relating to railway siding remained (November 2018) incomplete and, hence, coal produced from Gevra OCM continued to be transported through road, thereby contributing to dust generation.

SECL attributed (November 2018) the delay in completion of siding works to structural hindrances at site which impeded the progress of work and subsequent (August 2014) foreclosure of the contract subsisting between RITES and their contractor. SECL further stated that track laying work was completed by RITES and that fitness certificate from the Railways was awaited.

The Ministry stated (April 2019) that construction of conveyor belt, CHP and railway lines are major civil/electrical/mechanical work, which require considerable time and are also subject to unforeseen obstacles such as land acquisition issues, delay in

obtaining various clearances, law & order problem *etc.* The projects were constantly being reviewed involving all stakeholders to ensure early commissioning.

The replies of Management/ Ministry are not tenable as the above factors contributing to delays in project implementation are known facts and challenges prevailing in the coal mining sector. Due to ineffective project management, SECL took substantial time to dismantle structures such as siding office, canteen building, HT electric poles, workshop boundary, huge quantity of construction materials *etc.* which were required to be removed from the proposed railway alignment. This delayed the progress in completion of railway siding by 33 months (November 2018) since completion of construction of Silo in February 2016.

In the Exit Conference, the Ministry stated (May 2019) that the progress of projects was being monitored by them on regular basis and necessary steps would be taken to complete the pending projects expeditiously.

**4.9.2** While granting EC for Lakhanpur and Lingaraj projects of MCL, MoEF&CC stipulated (May 2014 and November 2015) that coal transportation to consumers be made by rail so as to reduce the dust pollution. Coal transportation from mine to washery / siding was to be through piped conveyor and wagon loading through silo. MoEF&CC also directed that no road transportation of coal be resorted to after the stipulated period.

We observed that silos were not commissioned till November 2018 though these were mandated to be completed by December 2016 (Lingaraj) and December 2017 (Lakhanpur). We further observed that though the work relating to construction of silo was completed in Lingaraj mine at a cost of ₹ 227.42 crore, this could not be operationalised due to absence of railway connectivity. Further, the contract for construction of silos was not awarded for Lakhanpur mines. We also observed that though EC did not stipulate construction of silo at Bharatpur mines, MCL constructed (June 2017) silos at a cost of ₹ 165 crore. However, the facility could not be operationalised so far (November 2018) due to defective conveyor system and, consequently, coal continued to be transported by road, thereby contributing to pollution.



Pic. 05: Para No. 4.9.2: Idling of SILO at Lingaraj mine of MCL and resorting to road transportation.

MCL stated (October 2018) that actions would be taken for early commencement of silo. Further developments are awaited (November 2018).

**4.9.3** EC relating to Block B mines of NCL stipulated (August 2014) that the road transport from mine to siding be discontinued from August 2016 and coal dispatch be made through Coal Handling Plant (CHP) / railway wagons with silo loading. We observed that CHP having a capacity to handle 3.5 MTPA was completed in January 2016 at a cost of ₹ 211.15 crore. However, coal could not be dispatched through CHP due to absence of rail connectivity and hence coal continued to be transported by road beyond August 2016, thereby contributing to air pollution.

NCL stated (October 2018) that laying of railway lines was held up due to opposition from local villagers demanding employment for land losers among them and that action was on hand for resolution of disputes. NCL further stated that the CHP was being used for crushing of coal. The reply is not tenable as land being an emotive issue, the consequences arising out of its acquisition and the demands of the land losers should have been addressed beforehand so as to ensure that the work relating to track laying remained synchronous with the pace of progress of construction of silos / CHP, so as to utilise the facility for the intended purpose.

#### **Audit Summation**

Air quality monitoring in three subsidiaries of CIL was found deficient as against 96 monitoring stations, only 58 were established. Further, 12 mines of four subsidiaries did not comply the SPCB directives for installation of Continuous Ambient Air Quality Monitoring Stations to facilitate online monitoring of ambient air quality. The average ash content in the coal extracted from some of the mines of Mahanadi Coalfields Limited (MCL) was more than 34 *per cent* and the same was supplied to various consumers. Although MCL contemplated setting of four washeries as early as in March 2008 for supply of beneficiated coal to thermal plants, these have not been commissioned so far. The concentration of PM<sub>10</sub> and PM<sub>2.5</sub> in air exceeded the levels prescribed in NAAQS in six mines across three subsidiaries during 2013-18. Shortcomings were noticed in the implementation of prescribed CIL guidelines (March 2014), in 17 out of the 28 operating mines selected for scrutiny. Due to delay in commissioning of rapid loading system in CCL, firming up tender for capacity augmentation of CHP at NCL, idle infrastructure on construction of railway siding/silo at SECL, MCL and NCL, coal continued to be transported by road, thereby contributing to air pollution.