

**BEFORE THE NATIONAL GREEN TRIBUNAL
EASTERN ZONE KOLKATA BENCH**

**Original Application No. 157 of 2024 / EZ.
(Earlier OA No. 771/2024/PB)**

News item titled "Odisha 9
hospitalised after suspected
gas leak at Rourkela Steel Plant"
appearing in The Times of India
dated 01.07.2024.

..... / Appellant

Vs.

Central Pollution Control Board & Ors.

..... / Respondents

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By the Respondent.No.2

Through

Papiya Banerjee Bihani

Kolkata

Date:

Smt. Papiya Banerjee Bihani
Advocates for the Respondent No.2
(State Pollution Control Board, Odisha)
e-mail: pbanerjeebihani@gmail.com
Phone No.:9831493390

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
EASTER ZONE BENCH, KOLKATA

MISCELLANEOUS APPLICATION NO.15/2024
(ORIGINAL APPLICATION NO. 157 OF 2024 / EZ)
(Earlier OA No.771/2024/PB)

28 JAN 2025

News item titled "Odisha 9 hospitalised
After suspected gas leak at Rourkela
Steel Plant" appearing in the Times of
India dated 01.07.2024

...Applicant

VERSUS

Central Pollution Control Board & Ors.

...Respondents

ADDITIONAL AFFIDAVIT ON BEHALF OF
STATE POLLUTION CONTROL BOARD,
ODISHA, RESPONDENT NO.2 IN
COMPLIANCE TO ORDER DATED
07.01.2025.

I, Dr. Kailasam Murugesan, IFS, son of late
Paramasivam Kailasam aged around 56 years, at present
working as Member Secretary, State Pollution Control Board,
having my office at Paribesh Bhawan, A/118, Nilakantha
Nagar, Unit-VIII, P.O. Nayapalli, Bhubaneswar, Dist – Khurda,
Odisha-751012, do hereby solemnly affirm and state as under:



MANJULA KUMAR PRADHAN
NOTARY PUBLIC
BHUBANESWAR
REGD NO ON 11/2009
PH -9437627119 (M)

1. That I am the Member Secretary of the Respondent No.2 Board and, as such, am well-acquainted with the facts and circumstances with the case and competent to swear this affidavit.
2. That this Hon'ble Tribunal while taking note of the affidavit dtd.06.09.2024 filed by the R-2 Board at para-3 read with para-4 & 5 in the order dtd.07.01.2025 directed the R-2 Board to file fresh affidavit bringing on record the report of investigation referred to in the preliminary investigation report carried out on dtd.01.07.2024, which has been annexed as Annexure-R2/2 to our affidavit dtd.06.09.2024.
3. That it is further humbly submitted that the Regional Officer of the R-2 Board at Rourkela along with two Dy.Environmental Engineers have inspected the Blast Furnace-V of R-5 on 17.01.2025 and collected the copy of detail investigation report in connection with leakage of CO gas, which has been annexed as Annexure-II of the Inspection Report. A copy of the inspection report for



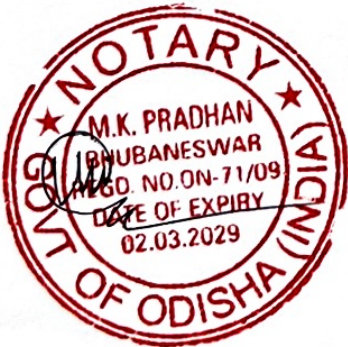
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MANJULA KUMAR PRADHAN
NOTARY PUBLIC
BHUBANESWAR
REGD NO ON-71/2009
PH -9437627119 (M)

22/1/25

inspection carried out on dtd.17.01.2025 along with its annexures is annexed to this affidavit and marked as ANNEXURE – R2/6 Colly.

4. That this affidavit is filed in compliance to the order dtd.07.01.2025 to bring on record the investigation report of the R-5 dealing with cause of gas leak which has been referred to in the Preliminary Investigation Report annexed as Annexure-R2/2 in our affidavit dtd.06.09.2024.
5. That the annexure annexed to the present affidavit is true and correct copy of its original.
6. That the contents of the above paragraphs are true and correct to the best of my knowledge, as derived from the official records, and that nothing material has been concealed therefrom.




DEPONENT
Member Secretary
State Pollution Control Board
Odisha, Bhubaneswar

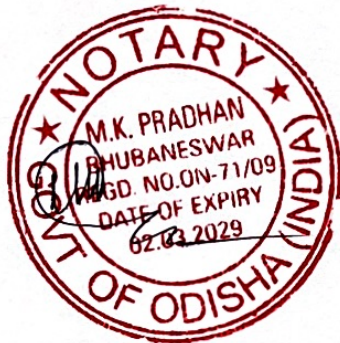
MANJULA KUMAR PRADHAN
NOTARY PUBLIC
BHUBANESWAR
REGD NO ON-71/2009
PH -9437627119 (M)


VERIFICATION:

I, the above named deponent, do hereby verify that the contents of the above affidavit are true and correct to the best of my knowledge, as derived from official records, and that nothing material has been concealed therefrom.

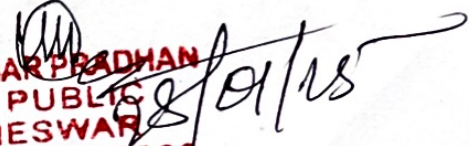
Verified at Bhubaneswar on this the 28th day of January, 2025.

SWORN BEFORE ME




DEPONENT
Member Secretary
State Pollution Control Board
Odisha, Bhubaneswar

MANJULA KUMAR PRADHAN
NOTARY PUBLIC
BHUBANESWAR
REGD NO ON-71/2009
PH -9437627119 (M)





Report on

M/s. Rourkela Steel Plant (SAIL),**Rourkela Dist: Sundargarh, Odisha**

Blast Furnace-V of Rourkela Steel Plant was inspected by the Board's officials on dtd.17.01.2025 in connection with verification of issues raised in the Board's letter No. 18688, dt.18.11.2024. Mr. P.C Dash, GM-I/C (Env. Engineering Department) & others of RSP were present during inspection.

Background

There was CO gas leakage in scrubber & clarifier area of Blast Furnace-5 at around 10:40 AM on dt.01.07.2024, causing exposure to about 9 no. of workers engaged in the proximity of the U-Seal-1 of Blast Furnace-5 area. Based on the report of the inspection conducted by Regional Office on 01.07.2024, Board has issued direction to the industry vide letter No.10200, dt.05.07.2024.

Industry was inspected on 27.08.2024 to verify the compliance status of directions issued by the Board vide letter dt.05.07.2024, based on the non-compliances observed during inspection industry was asked to comply the lapses vide letter No. 18688, dt.18.11.2024.

The final investigation report of gas leakage incident at Blast Furnace-5 of M/s Rourkela Steel Plant on dtd.01.07.2024 was by Board vide Board's letter No.49 dtd.02.01.2025 was sought from Deputy Director Factories & Boilers, Rourkela Division and report of same is enclosed for reference as Annexure-I.

Industry has also submitted detail investigation report in connection with leakage of CO Gas in Blast Furnace-V vide letter No.691/EE/7/5, dt.17.01.2025. Report is enclosed for reference as Annexure-II.

Observations w.r.t. issues raised in the Board's letter No.18688, dt.18.11.2024

S.N.	Non-Compliances	Compliance Status
1.	Ensure proper housekeeping in Gas Cleaning Plant (GCP) area.	Housekeeping in the Gas Cleaning Plant (GCP) area was observed to be satisfactory.
2.	Clear the silt and sediments in the drains in GCP area.	It was observed that silt and sediments of the internal drains have been cleared.

Er. B.K Bhoi, DEE
Dy. Env. Engineer

Er. C. S Chauhan
Dy. Env. Engineer

Dr. A. K. Mallick
RO & ACES

Annexure - I

OFFICE OF THE DY. DIRECTOR OF FACTORIES & BOILERS:
ROURKELA DIVN. AT/PO-UDITNAGAR, ROURKELA - 769012

Letter No. 1147 Dated 12.09.2024

To,

The Director of Factories & Boilers,
Odisha, Bhubaneswar.

Sub :-


Final investigation report of gas leakage incident at Blast Furnace- 5 of
M/s Rourkela Steel Plant (SG-28) on dated 01.07.2024.

Sir,

With reference to the above cited subject, I had visited the spot of the gas leakage incident and conducted the investigation. After completion of investigation, I am submitting herewith the investigation report along with its enclosures for favour of your kind information and necessary action.

Encl:- As above.

Yours faithfully,


Dy. Director of Factories & Boilers
Rourkela Division, Rourkela

certified.



20-07-2024
Deputy Director of Factories & Boilers
Rourkela Division, Rourkela

INVESTIGATION REPORT OF SRI BIBHU PRASAD, DY. DIRECTOR OF FACTORIES & BOILERS, ROURKELA DIVISION ON GAS LEAKAGE INCIDENT AT M/S ROURKELA STEEL PLANT ON 01.07.2024.

01. Name & address of the factory:- M/s Steel Authority of India Ltd.,
Rourkela Steel Plant
At/P.O.-Rourkela, Dist- Sundargarh
(License No- SG-28), PIN-769011
02. Name & address of the occupier:- Sri S.R. Suryawanshi,
ED (Works), RSP, Rourkela
Address- V/8, Sector-19, Rourkela,
Dist-Sundargarh, Odisha-769005
03. Name & address of the manager:- Sri Sumeet Kumar,
CGM, Blast Furnace, RSP, Rourkela
Address- B/214, Sector-20, Rourkela,
Dist-Sundargarh, Odisha-769005
04. Person present during investigation:- Sri V. Mishra(GM, Operation) and
Sri S. K. Sharma (GM, Operation)
of Blast Furnace Department,
Rourkela Steel Plant

05. Name & Address of the injured/deceased person:-

Sl No.	Name of the injured person	Designation	Age	Address
1.	Sri Jairam Barik	Sr Mgr, BF(O)	36	Qtrs No.A/134, Sector-17
2.	Sri P. K. Sahu	MOMT,BF	52	Qtrs No.G/185, Sector-06
3.	Sri Dikhisyam Das	MOMT,BF	36	Qtrs No.F/76, Sector-15
4	Sri Raju Ku. Maity	Contractual Employees, M/S TPL	38	Qtrs. No.B/34, Basanti Colony, Uditnagar
5.	Sri Pradip Kujur	Contractual Employees, M/S TPL	30	At-Chaurpatoli, Koelnagar
6	Sri Santanu Nayak	Contractual Employees, M/S TPL	33	Qtrs No.B/98, Sector-13
7	Sri Suraj Chhatri	Contractual Employees,	26	At-Neherupai Basti, Sector-20

Certified

20/07/2024
Deputy Director of Factories & Boilers
Rourkela Division, Rourkela

		M/S TPL		
8	Smt. Laxmi Singh	Contractual Employees, M/s S K Gouda	34	At-Narayan Market, Fertilizer
9	Smt. Pana Soren	Contractual Employees, M/s S K Gouda	39	

06. Date & time of accident:- At about 10.40 A.M. Dated 01.07.2024

07. Nature and extent of Injuries:- Contact with Carbon Monoxide(CO) gas
Non -Reportable
All released from hospital by next day
(02.07.2024)

08. Brief description of the place of occurrence of accident:-

M/s Rourkela Steel Plant, is a registered factory under the Factory Act bearing registration No. SG-28. The factory is engaged in Manufacturing of CR Sheets (GP/GC Sheets), CR NO Sheets, Plates, Special Plates, HR Coils, ERW & SW Pipes etc..


On dated 01.07.2024 at around 10:40 AM, employees working in scrubber & clarifier area of BF-5 found two workers of M/s Tata Power Limited lying unconscious on the nearby road in the U-seal pot area. Seven number of other workers including housekeeping women tried to save them. Unfortunately none of the rescue members were wearing SCBA sets and due to which affected by Carbon Monoxide poisoning.

All are shifted to Ispat General Hospital(IGH), Rourkela, one person, Smt. Pana Soren was released after first aid treatment at OHSC, Rourkela Steel Plant, Rourkela. All the workers were discharged from hospital on 02.07.2024.

09. Date and time of receipt of Information: - Telephonic information on
01.07.2024 at about 11.30 A.M.

10. Date of Investigation of accident: - 01.07.2024 at about 02.00 P.M.
Undersigned along with Asst. Director of
Factories & Boilers, Rourkela Zone-I, II
& III.

11. Names of witnesses who are present at
the time of Accident:- (i) Sri V. Mishra(GM Blast Furnace, Operation)
Blast Furnace Dept., Rourkela Steel Plant,

Certified

20-07-2024
Deputy Director of Factories & Boilers
Rourkela Division, Rourkela

Rourkela, Dist.- Sundargarh, State- Odisha

(ii) Sri Arun Kumar Nayak (Supervisor)

M/s Sushanta Kumar Gouda,

Blast Furnace Dept., Rourkela Steel Plant,

Rourkela, Dist.- Sundargarh, State- Odisha

12. **The Statement of fact from the witnesses** :-Statements are enclosed in Annexure-I.

13. **How the accident occurred:-**

On dated 01.07.2024, at about 10.40 AM, two workers working in scrubber and clarifier area of Blast Furnace-5 found unconscious and lying on the U-seal area. Seven others, including housekeeping staff working nearby tried to rescue them. Unfortunately they were not using any SCBA & got exposed to Carbon Monoxide (CO) gas.

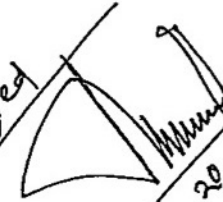
As the U-seal was isolated immediately, gas leakage stopped & people were shifted to first-aid centre. One lady contractual employee, Smt. Pana Soren was released after being administered first aid at plant OHSC. Other 8 employees were admitted to IGH as precautionary measure. Out of eight employees, one was discharged from IGH on the same day evening and all others admitted were released from IGH on the very next day i.e. 02.07.2024 and all of them resumed duty on 03.07.2024.

Analysis of Accident:-

On receipt of information, I along with Asst. Director of Factories & Boilers, Rourkela Zone-I, Asst. Director of Factories & Boilers, Rourkela Zone-II and Asst. Director of Factories & Boilers, Rourkela Zone-III, Rourkela rushed to the accident spot and investigated the matter. Examined the relevant documents, I interrogated the witnesses present there, recorded their statements, & took the photographs.

On investigation it was revealed that:-

- (1) The incident occurred due to momentarily surge in gas pressure and slight opening of the valve leading to localized leakage of BF gas from the drain of U-seal. Additional CO monitors were not installed, covering more area and there was no provision of feedback at Blast Furnace-5 control room with audio alarm facility.
- (2) It is anticipated that through a drain valve attached with the U-seal/water seal, carbon monoxide egressed and affected the injured.


Certified

 20.07.2024
 Deputy Director of Factories & Boilers
 Rourkela Division, Rourkela

- (3) Locking arrangement was not provided in the spindle of the flushing valve of U-seal to prevent its accidental opening.
 - (4) Strict supervision was not ensured during U-seal activities.
 - (5) CCTV cameras were not installed in the U-seal area.
 - (6) U-seal area was not barricaded to restrict entry of unauthorized persons.
- 14) Amount of compensation paid or likely to be paid by the Factory and or the Employees State Insurance Corporation. Opinion of the Employees State Insurance Doctor if the person is covered under ESI:-
All the affected person were treated free of cost and expenses borne by the management. The wages of the affected was given.
- 15) The provisions of the Factories Act and Rules made there under violated:-
Strict supervision was not ensured during U-seal activities. It is the duty of the occupier to provide such *information, instruction, training and supervision* as are necessary to ensure the health and safety of all workers at work. This was not ensured for which accident took place.

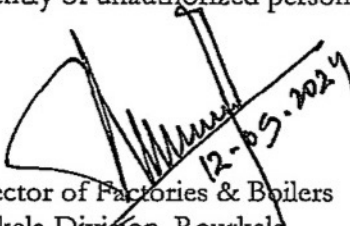
Hence the occupier and Factory Manager both have violated Section 7A(2)(c) of Factories Act, 1948

16) Suggestion or observation of the Inspector for taking remedial measures against future reoccurrence:-

- Additional CO gas monitors to be installed near U-seal.
- Feedback of CO gas monitor from U-seal area to be connected to BF-5 control room with provision of audio alarm system.
- Locking arrangement to be provide in the spindle of the flushing valve of U-seal to prevent its accidental opening.
- During gas line preventive maintenance jobs, area incharge or supervisors to ensure strict supervision.
- Emergency contact nos. to be displayed in that area.
- CCTV cameras to be installed in the U-seal area for better monitoring.
- U-seal area needs to be hard barricaded to restrict entry of unauthorized persons.

Certified.

20.07.2023

Deputy Director of Factories & Boilers
Rourkela Division, Rourkela


12.05.2024
Dy. Director of Factories & Boilers
Rourkela Division, Rourkela

Annexure - II

Steel Authority of India Limited
Rourkela Steel Plant
Rourkela - 769011
Fax : 0661-2510183

Ref.No. : 691/EE/7/5
Date : 17/01/2025.

Respected Sir,

Sub. : Submission of Detail investigation report in connection with leakage of Gas in Blast Furnace-V of RSP.-reg.

This has reference to Board's letter no. 3184 dated 02/07/2024 regarding submission of Detail report in connection with Gas Leakage Incident in Blast Furnace-V of RSP which occurred on 01.07.2024.

A committee was constituted consisting of Sr Officials of RSP on 01.07.2024 to investigate the gas leakage which occurred at BF-V on 01.07.2024 and the report is enclosed herewith for your kind perusal.

Thanking you Sir,

With kind regards,

Yours faithfully
for Rourkela Steel Plant,

(P C Dash)

General Manager I/c
Environmental Engg. Department

To : Regional Officer,
State Pollution Control Board, Odisha,
Rourkela

B.K.B.
17-01-25

B.K.B.
17-01-25

DEO, Pt- put up in file.

Committee Report

A committee was constituted with reference No. ED(W)/PSO/247 dated 01.07.2024 to investigate gas leakage incident took place at BF-V U-Seal area comprising of the following members:

1. Sri Kartikeya Behera, CGM(NPM & SPP)
2. Sri Abakasa Behera, GM, Safety Engineering Department
3. Sri B. P. Pandey, DGM, EMD

On 01.07.2024 at around 10.37 AM it was reported to fire service department that few employees and contractual employees have gas exposure near BF V clarifier road adjacent to TRT, similarly a call was made to OHSC for deputing ambulance for emergency evacuation of affected persons by Sri R. S. Kaushal, GM BF. Persons working nearby tried to rescue the affected persons from the area and in due course of evacuation they were also exposed to gas. Fire service personnel administered artificial resuscitation to two affected persons of M/s TPL at site at around 11.00 AM. All the nine affected persons were sent to OHSC and thereafter eight persons shifted to IGH for further medical treatment. By 2PM, 6 persons were declared fit and shifted to ward at 5 PM, remaining two persons declared fit and shifted to ward on 02.07.2024 at 8 AM. All persons discharged from IGH on same day.

Committee visited the site on 01.07.2024 and interacted with operation & maintenance crew of the Blast Furnace-V and Fire Services Department.

Sequence of events leading to incident:

- a) There are three BFG water seals in BF-5 area. Water seal no.1 drain valve repair job was scheduled to be under taken during planned shutdown of BF-V in 2nd half.
- b) Housekeeping job was being carried out near thickener area.
- c) Sri J Barik Sr. Manager received information that around 4 persons are feeling uneasy and laid down probably due to poisonous gas exposure at 10.40 a.m.
- d) Mr. Barik arrived at site with his two non-executive colleagues(Sri P K Sahoo and Sri Dukhishyam Das) and started rescuing the affected persons.
- e) Two more contract employees were working in nearby area also helped to rescue the victims,
- f) Fire Brigade team and ambulance arrived at site and shifted the victims to OHSC and thereafter IGH.
- g) At around 10.40 AM Sri Sushant Swain of GCP operation received a call from Sri Ganesh Munda that one person found to be sitting and gradually laid down on the floor near flare stack area.

Abakasa Behera
27/7/24

Abakasa Behera
02/07/24

Abakasa Behera
27/7/24

- h) Sri Swain went to LD booster station area near the ramp and observed that gas is gushing out from the BFG water seal no. 1 drain seal.
- i) He arrived at the spot donning OBA (Oxygen Breathing Apparatus) and closed the drain valve of BF gas U seal no 1 and after some time the overflow was maintained. The area was cordoned off and barricaded. The gas leakage arrested.

Root Cause of the Incident:

Possible causes of the incident:

1. BFG Water seal no 1 drain seal might have blown away due to pressure fluctuation in the BF grid. Committee studied the BFG stove line pressure transmitter(nearest to water seal) graph and maximum pressure recorded in the shift was 0.14 Kg/cm² which is within norm and the possibility of seal breakage is ruled out(as water seal designed to sustain maximum pressure of 0.27Kg/cm²: committee measured the sealing height)
- 2 There was plan to shut down BF-V for four hours for tuyers replacement during which water seal no.1, 2 &3 were to be raised. To ensure proper functioning of isolation valves of the U seals, inspection/servicing/checking of the valves might have been carried out, in the process of checking drain valve of U seal no.1(NB150) the drain valve might not have been fully closed leading to leakage of water .This lead to breakage of drain seal which resulted gushing out of BF gas hence exposure of gas.

Suggested remedial measures to prevent re-occurrence:

1. Water seal overflow to be ensured and recorded in every shift.
2. Level switches with audio visual alarm in control room to be installed in all 3 U seals to alert the operator whenever the water level is getting low to take corrective action.
3. NB150 drain valve to be kept in blank condition in normal operation, De-Blanking and flushing of the water seal to be carried out under direct supervision with PTW.
4. On line CO detector near the vicinity of all water seals to be installed with audio visual alarm at control room and indication in POC.

Fixing Responsibility for the incident:

1. Direct supervision and coordination between mechanical and operation could have avoided this incident
2. Inspection and maintenance of U-seal & gas line to be carried out under direct supervision by respective agencies. The concerned mechanical executive handling outsourced agency M/s TPL for the U-seal maintenance is responsible for the incident.


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21/7/24

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02/07/24

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21/7/24

Measure to be taken to stop re-occurrence of the incident:

1. All the water seal areas to be monitored through CC TV.
2. Drain seal size to be reduced from NB300 to NB 150 which will reduce gas flow to 1/4th in case of breakage of water seal.
3. Adequate multilingual signage, DO's & Don'ts to be provided near U seal area for alerting the employees.
4. Wind sock to be provided at prominent locations.
5. CABA (Compressed air breathing apparatus) set and OBA (Oxygen breathing apparatus) to be stored at ground floor to reduce the time.
6. Fencing around the U-Seal area to be done with Entry Gates.
7. Periodic Calibration of Online CO Monitors to be done on monthly basis and record to be maintained.
8. BFG to Stove gas line Pressure relief logic set points to be suitably reduced to avoid pressure surge in water seal due to process upset.


(B. P. Pandey)


(Abakasa Behera)


(Kartikeya Behera)