



OFFICE OF THE COLLECTOR & DISTRICT MAGISTRATE: SUNDARGARH

No. 307 /Judl, Dated. 04.02.2021 /

To

**The Consultant (Judicial),
National Green Tribunal,
Principal Bench, Faridkot House,
Copernicus Marg, New Delhi-110001.**

Sub: Submission of report/ document in OA No. 09/2021- Four workers dead due to toxic gas leak in Rourkela Steel Plant.

Ref: Letter Dtd. 07.01.2021 of Hon'ble Green Tribunal.

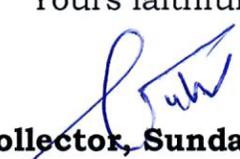
Sir,

With reference to the letter on the subject cited above, I am to say that, the reports on "**Four workers dead due to toxic gas leak in Rourkela Steel Plant**" have been received from the following quarters.

1. Copy of report of Member Secretary, State Pollution Control Board, Bhubaneswar sent to Registrar, NGT vide his Letter No. 1067/Dtd. 25.01.2021.
2. Copy of report of Regional Officer, State Pollution Control Board, Rourkela sent to Member Secretary, State Pollution Control Board, Bhubaneswar.
3. Copy of report of Asst. Director of Factories & Boilers, Rourkela Zone-I, Rourkela sent to Director of Factories & Boilers, Odisha, Bhubaneswar.
4. Copy of report of Sri Pankaj Kumar of SAIL, Rourkela Steel Plant, Rourkela.

Accordingly, the copy of the same are sent herewith for your kind information and necessary action as desired.

Yours faithfully


Collector, Sundargarh

25

**Brief Note on Accident Occurred due to exposure to Gas leakage from
Coal Chemical Department of M/s Rourkela Steel Plant (Steel Authority of
India Limited), Rourkela**

Regional Officer, SPC Board, Rourkela has inspected the incident site of M/s Rourkela Steel Plant on dtd. 6.01.2020 in connection with accident due to gas leakage. From the inspection report, it is revealed that the accident occurred while preventive maintenance job was taken-up for replacement and cladding of 30m coke oven gas pipeline at the gas mixing tank bypass line at coal chemical plant of coke oven department of M/s Rourkela Steel Plant on dtd.06.01.2021.

Prior to the execution of this work as per procedure the line was water sealed and purged with nitrogen gas and both sides of the subject portion of pipeline were isolated by closing the valves. As per the protocol, these jobs were started from 7.00 AM on 06.01.2021 at the site in presence of Fire Services, Mechanical Dept., of Coal Chemical Department and Energy Management Department. 4 nos. of contract workers of M/s. Star Construction, who were deployed for execution of replacement and cladding of 30m coke oven gas pipeline work at coal chemical department were exposed to the gas leaked at about 9.20 AM on 06.01.2021 during removing the bolts of the flange joints in the pipeline at about 6m height from the ground level.

Though, the gas line was purged with nitrogen there might have been pocket formation of Carbon Monoxide gas and work men got exposed to it during removing the bolts. All of them were immediately shifted to the

Occupational Health Service (OHS) centre situated inside the plant and thereafter to Ispat General Hospital. Doctors declared them dead around 11.40 AM on 6.1.2021. The name of deceased persons are Sri Ganesh Chandra Pahil, Sri Rabindra Sahu , Abhimanyu Sah and Sri Brahmananda Panda.

The accident was occurred on 06.01.2021 about 9.20 AM and gas leakage was stopped within 30 minutes of occurrence. Composition of gas is of Hydrogen 58.4%, Methane-24%, CO-7.8%, Nitrogen -5.2%, Carbon Dioxide -.2.1%, other hydrocarbon -1.7%, Oxygen -.07%.

Status of impact on Environment

It is a Localized incident. During inspection on 06.01.2021, at 3.00 PM Carbon Monoxide gas concentration at the closed vicinity of the incident was monitored with portable Carbon Monoxide (CO) gas monitor and found vary from 0 to 35 PPM within the prescribed limit of 50 PPM in the work zone area. Rourkela Steel Plant has installed 4 nos. of Continuous Online Ambient Air Quality Monitoring Stations (CAAQMS) for monitoring of PM₁₀, PM_{2.5}, SO₂, NO_x and CO. The Carbon monoxide monitoring data of 3 nos. of Continuous Online Ambient Air Quality Monitoring Stations (CAAQMS) i.e., Station -2 (Fertilizer Hospital, Sector-22), Station -3 (Secondary Sale Stock yard Building of Rourkela Steel Plant) and Station -4 (Eccentric Resistance Welding Pipe Plant of Rourkela Steel Plant) it is found that concentration of Carbon Monoxide in the ambient air is within prescribed standard of 4mg/m³ (1hour).



STATE POLLUTION CONTROL BOARD, ODISHA

[DEPARTMENT OF FOREST AND ENVIRONMENT, GOVERNMENT OF ODISHA]
Paribesh Bhawan, A/118, Nilakanthanagar, Unit – VIII,
Bhubaneswar – 751 012, INDIA

No. 1067

Date: 25-01-2021

VII – L – Misc – 834

By E-mail

To

The Registrar
National Green Tribunal
Principal Bench,
Faridkot House, Copernicus Marg
New Delhi-110001
E-mail: judicial-ngt@gov.in
ngt.filing@gmail.com

Sub: OA No.9/2021 in the matter of News Item published in the Indian Express dtd.07.01.2021 titled "Four workers dead due to Toxic Gas leak in Rourkela Steel Plant".

Ref: Suo Motto Notice of hearing dtd.07.01.2021 received through E-mail dtd.08.01.2021.

Sir,

The Hon'ble Tribunal will take up the aforesaid matter for hearing through video conferencing on 11.02.2021 at 10:30 AM, wherein direction has been issued to file report/document, if any and also to remain present before the Bench. The aforesaid matter was enquired into from the Regional Officer, SPC Board, Odisha at Rourkela and it is ascertained that inspection of the site of M/s. Rourkela Steel Plant (RSP) has been taken on 06.01.2021 in connection with accident due to gas leakage. The inspection report reveals that the accident occurred while preventive maintenance job was taken up for replacement and cladding of 30m Coke Oven Gas Pipeline at the Gas Mixing Tank Bye-pass Line at Coal Chemical Plant of Coke Oven Department of M/s. RSP on dtd.06.01.2021. Copy of the inspection report is annexed and marked as **ANNEXURE-1**.

The said inspection report also reveals that prior to the execution of this work as per procedure the line was water sealed and purged with nitrogen gas and both sides of the subject portion of pipeline were isolated by closing the valves. As per the protocol, these jobs were started from 7.00 AM on 06.01.2021 at the site in presence of Fire Services, Mechanical Dept., of Coal Chemical Department and Energy Management Department. 4 nos. of contract workers of M/s. Star Construction, who were deployed for execution of replacement and cladding of 30m coke oven gas pipeline work at coal chemical department

were exposed to the gas leaked at about 9.20 AM on 06.01.2021 during removing the bolts of the flange joints in the pipeline at about 6m height from the ground level.

Though, the gas line was purged with nitrogen there might have been pocket formation of Carbon Monoxide gas and work men got exposed to it during removing the bolts. All of them were immediately shifted to the Occupational Health Service (OHS) centre situated inside the plant and thereafter to Ispat General Hospital. Doctors declared them dead around 11.40 AM on 6.1.2021. The name of deceased persons are Sri Ganesh Chandra Pahil, Sri Rabindra Sahu, Abhimanyu Sah and Sri Brahmananda Panda.

It is ascertained from the Rourkela Steel Plant authority that the accident was occurred on 06.01.2021 about 9.20 AM and gas leakage was stopped within 30 minutes of occurrence. Composition of gas is of Hydrogen 58.4%, Methane-24%, CO-7.8%, Nitrogen -5.2%, Carbon Dioxide -2.1%, other hydrocarbon -1.7%, Oxygen -0.07%.

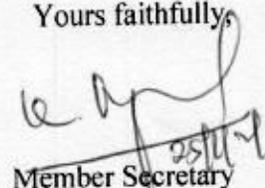
The observation on environmental aspect is given below:

The gas leakage it is a localized incident. During inspection on 06.01.2021 at 3.00PM, Carbon Monoxide gas concentration at the close vicinity of the place of incident was monitored with portable Carbon Monoxide (CO) gas monitor and found to vary from 0 to 35 PPM within the prescribed limit of 50 PPM in the work zone area. Rourkela Steel Plant has installed 4 nos. of Continuous Online Ambient Air Quality Monitoring Stations (CAAQMS) at factory site for monitoring of PM₁₀, PM_{2.5}, SO₂, NO_x and CO. The Carbon monoxide monitoring data of 3 nos. of Continuous Online Ambient Air Quality Monitoring Stations (CAAQMS) i.e., Station -2 (Fertilizer Hospital, Sector-22), Station -3 (Secondary Sale Stock yard Building of Rourkela Steel Plant) and Station -4 (Eccentric Resistance Welding Pipe Plant of Rourkela Steel Plant) indicated that concentration of Carbon Monoxide in the ambient air is within prescribed standard of 4mg/m³ (1hour). Copy of online monitoring data of M/s. Rourkela Steel Plant is annexed and marked as **ANNEXURE-2**.

The aforesaid facts may please be placed before the Hon'ble Tribunal for their kind perusal.

Encl: As above.

Yours faithfully,


Member Secretary

Regional Office, Rourkela of S.P.C.B, Odisha

Inspection Report on Incidental Exposure of Carbon Monoxide (CO) Gas Coal Chemical Department of M/S. Rourkela Steel Plant (SAIL), Rourkela Dist: Sundargarh, Odisha

Coal Chemical Department (CCD) of Rourkela Steel Plant was inspected on 06.01.2021 in connection with exposure of Carbon Monoxide (CO) gas during maintenance work gas pipeline at Coal Chemicals Plant. Mr. V. V. R Murty, GM (Env.Engg Dept.) of RSP was present during inspection.

Occurrence of Incident:

The matter was discussed with the Mr. P. Jain, AGM-CCD-Operation at the site. He has appraised that a planned preventive maintenance job was taken up for replacement & cladding of 30m Coke Oven gas pipeline at the Gas mixing tank bypass line at Coal Chemicals Plant of Coke Ovens Department on 06.01.2021. He also stated that, prior to execution of this work as per procedure, the line was water sealed and purged with nitrogen gas and both sides of the subject portion of the pipeline were isolated by closing the valves. As per protocol these jobs were started from 7.00 AM on 06.01.2021 at the site in presence of personnel of Fire services, Mechanical department of CCD and Energy Management Department.

It was learnt that four contract workers of M/s Star Constructions deployed for execution of replacement & cladding of 30m Coke Oven gas pipeline work at Coal Chemicals Department of SAIL, Rourkela Steel Plant exposed to gas at about 9.20 AM on 6.01.2021 during removing the bolts of the flange joints in subject pipeline at about 6 meter height from the ground level. All of them were immediately shifted to the OHS Centre situated inside the Plant and thereafter to Ispat General Hospital. It is learnt that the doctors declared them dead around 11.40 AM.

There was no leakage of gas during the inspection at the site; approximate Composition of the gas: Carbon Dioxide (CO₂)-2.1%; Oxygen (O₂) - 0.7 %; Carbon Monoxide (CO) - 7.8 %; Methane (CH₄)-24 %, Hydrogen-58.4%, Nitrogen-5.2 % and Other Hydrocarbons-1.7%. It was a localised incident for a short period.

Name of the persons who succumbed:

The deceased contract workers are Shri Ganesh Chandra Pahil (Age: 55), Shri Rabindra Sahu (Age: 59), Shri Abhimanyu Sah (Age: 33) and Shri Bramhananda Panda (Age: 51).

Status of Impact on Environment:

Mr. B. D. Behera, Manager CCD was also present at the site with portable CO gas monitor during inspection and CO gas concentration at the close vicinity of the incident site was found to vary from 0 to 35 PPM at about 3.00 PM on 06.01.2021 against permissible limit of CO gas

19/08
concentration of 50 PPM in the work zone area. The unit has also installed 4 no. of Online Continuous ambient air quality monitoring stations (CAAQMS) for monitoring PM10, PM2.5, SO2, NOx & CO. The CO monitoring data of three CAAQMS i.e Station-2: Fertilizer Hospital, Sector—22, Station-3: SSSY Building, Rourkela Steel Plant and Station-4: ERW Pipe Plant, Rourkela Steel Plant is enclosed as Annexure-I for reference. Data of Station-1(Indo German Club) is not taken into consideration as it was located far away from the plant premises. From the date of CAAQMS, it revealed that concentration of CO at the ambient air is within the prescribed standard of 4 mg/m³ (1hour).

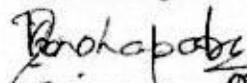
Remarks

Although gas line was purged with nitrogen, it seems that there might have been pocket formation of CO gas and workmen got exposed to it during removing the bolts of the flange joints in subject pipeline. It is apprehended that the remaining gas from the isolated pipe line may have escaped to the atmosphere through the opened flange joints within few minutes and got diluted.

It was also learnt that, a high level committee has been formed by the RSP to inquire into the cause of the incident and to recommend remedial measures to prevent re-occurrences. In the mean time management of Rourkela Steel Plant has suspended the following Officers:

1. Shri Nabendu Das, Dy. General Manager, Coal Chemicals Department
2. Shri Gopabandhu Barik, Dy. General Manager, Energy Management Department
3. Shri Smruti Ranjan Sahoo, Asst. Manager, Safety Engineering Department

Counter Signed


(Dr. P. K. Mohapatra) 02/01/21
Regional Officer


(Er. D. K. Sahoo)
Dy. Env. Engineer

CO monitoring result of CAAQMS of Rourkela Steel Plant				
Rourkela Steel Plant				
Average Report				
Report Created by QSPCB on 2021-01-08 11:13:00				
Sl No.	Time	AAQMS_2-CO(mg/m3)	AAQMS_3-CO(mg/m3)	AAQMS_4-CO(mg/m3)
1	2021-01-06 06:00:00	0.64	0.66	0.56
2	2021-01-06 06:15:00	0.69	0.66	0.56
3	2021-01-06 06:30:00	0.74	0.66	0.56
4	2021-01-06 06:45:00	0.33	0.66	0.56
5	2021-01-06 07:00:00	0.17	0.66	0.56
6	2021-01-06 07:15:00	0.17	0.66	0.56
7	2021-01-06 07:30:00	0.17	0.66	0.56
8	2021-01-06 07:45:00	0.17	0.66	0.56
9	2021-01-06 08:00:00	0.17	0.66	0.55
10	2021-01-06 08:15:00	0.17	0.66	0.55
11	2021-01-06 08:30:00	0.17	0.66	0.55
12	2021-01-06 08:45:00	0.17	0.66	0.55
13	2021-01-06 09:00:00	0.17	0.66	0.55
14	2021-01-06 09:15:00	0.17	0.66	0.55
15	2021-01-06 09:30:00	0.65	0.66	0.55
16	2021-01-06 09:45:00	0.74	0.66	0.55
17	2021-01-06 10:00:00	0.74	0.66	0.56
18	2021-01-06 10:15:00	0.74	0.66	0.58
19	2021-01-06 10:30:00	0.74	0.66	0.58
20	2021-01-06 10:45:00	0.74	0.66	0.58
21	2021-01-06 11:00:00	0.75	0.66	0.58
22	2021-01-06 11:15:00	0.76	0.66	0.58
23	2021-01-06 11:30:00	2.19	0.66	0.42
24	2021-01-06 11:45:00	2.46	0.66	0.54
25	2021-01-06 12:00:00	2.12	0.66	0.54
26	2021-01-06 12:15:00	1.68	0.66	0.54
27	2021-01-06 12:30:00	2.3	0.66	0.53
28	2021-01-06 12:45:00	2.59	0.66	0.53
29	2021-01-06 13:00:00	1.4	0.66	0.53
30	2021-01-06 13:15:00	2.09	0.66	0.53
31	2021-01-06 13:30:00	2.13	0.66	0.53
32	2021-01-06 13:45:00	0.74	0.66	0.53
33	2021-01-06 14:00:00	0.37	NA	0.51
34	2021-01-06 14:15:00	0.43	NA	0.24
35	2021-01-06 14:30:00	0.14	NA	0.24
36	2021-01-06 14:45:00	0.19	0.66	0.24
37	2021-01-06 15:00:00	0.33	0.66	0.24
38	2021-01-06 15:15:00	NA	NA	0.24
39	2021-01-06 15:30:00	NA	NA	0.24
40	2021-01-06 15:45:00	0.05	NA	0.24
41	2021-01-06 16:00:00	0.62	NA	0.24
42	2021-01-06 16:15:00	1.64	NA	0.24
43	2021-01-06 16:30:00	2.3	NA	0.24
44	2021-01-06 16:45:00	2.75	NA	0.24
45	2021-01-06 17:00:00	2.78	NA	0.24
46	2021-01-06 17:15:00	2.55	0.66	0.36
47	2021-01-06 17:30:00	2.89	0.66	0.48
48	2021-01-06 17:45:00	2.71	0.66	0.54
49	2021-01-06 18:00:00	1.67	0.66	0.55
50	2021-01-06 18:15:00	2.09	0.66	0.55
51	2021-01-06 18:30:00	1.51	0.66	0.55
52	2021-01-06 18:45:00	2.77	NA	0.54
53	2021-01-06 19:00:00	1.8	0.66	0.54



ଆଞ୍ଚଳିକ କାର୍ଯ୍ୟାଳୟ
ରାଜ୍ୟ ପ୍ରଦୂଷଣ ନିୟନ୍ତ୍ରଣ ବୋର୍ଡ, ଓଡ଼ିଶା
(ଜଳାଳ ଓ ପରିବେଶ ବିଭାଗ, ଓଡ଼ିଶା ସରକାର)
ଶାନ୍ତ ନଗର ଅଫିସ୍ ପରିସର
ସେକ୍ଟର-୫, ରାଉରକେଲା-୭୬୯୦୦୨, ଜିଲ୍ଲା-ପୁରୀ, ଓଡ଼ିଶା

No. 52 / CTO-0001(P-12)

Date 07/01/2021

By email: akswar@ospcboard.org / membersecretary@ospcboard.org

To

Dr. A.K. Swar, C. E. E.,
S.P.C.B., Bhubaneswar - 12

Sub: **Accident due to gas leakage in M/s Rourkela Steel Plant .. reg.**

Sir,

With reference to the letter no. 330 dated 07.01.2021 on the subject, it is to intimate that the incidental site of gas pipeline under Coal Chemical Department has been inspected by Sri D. K. Sahoo, DEE on the date of incident on 06.01.2021. Inspection report is submitted herewith for kind information. Report covering the aspects vide the above referred letter dated 07.01.2021 follows with the information received from the industry.

Encl.: as above

Yours faithfully,

Banohar Patra
Regional Officer 07/01/21

SA
8.1.2021

9 ✓
29/1

Regional Office, Rourkela of S.P.C.B, Odisha

Inspection Report on Incidental Exposure of Carbon Monoxide (CO) Gas Coal Chemical Department of M/S. Rourkela Steel Plant (SAIL), Rourkela Dist: Sundargarh, Odisha

Coal Chemical Department (CCD) of Rourkela Steel Plant was inspected on 06.01.2021 in connection with exposure of Carbon Monoxide (CO) gas during maintenance work gas pipeline at Coal Chemicals Plant. Mr. V. V. R Murty, GM (Env.Engg Dept.) of RSP was present during inspection.

Occurrence of Incident:

The matter was discussed with the Mr. P. Jain, AGM-CCD-Operation at the site. He has appraised that a planned preventive maintenance job was taken up for replacement & cladding of 30m Coke Oven gas pipeline at the Gas mixing tank bypass line at Coal Chemicals Plant of Coke Ovens Department on 06.01.2021. He also stated that, prior to execution of this work as per procedure, the line was water sealed and purged with nitrogen gas and both sides of the subject portion of the pipeline were isolated by closing the valves. As per protocol these jobs were started from 7.00 AM on 06.01.2021 at the site in presence of personnel of Fire services, Mechanical department of CCD and Energy Management Department.

It was learnt that four contract workers of M/s Star Constructions deployed for execution of replacement & cladding of 30m Coke Oven gas pipeline work at Coal Chemicals Department of SAIL, Rourkela Steel Plant exposed to gas at about 9.20 AM on 6.01.2021 during removing the bolts of the flange joints in subject pipeline at about 6 meter height from the ground level. All of them were immediately shifted to the OHS Centre situated inside the Plant and thereafter to Ispat General Hospital. It is learnt that the doctors declared them dead around 11.40 AM.

There was no leakage of gas during the inspection at the site; approximate Composition of the gas: Carbon Dioxide (CO₂)-2.1%; Oxygen (O₂) - 0.7 %; Carbon Monoxide (CO) - 7.8 %; Methane (CH₄)-24 %, Hydrogen-58.4%, Nitrogen-5.2 % and Other Hydrocarbons-1.7%. It was a localised incident for a short period.

Name of the persons who succumbed:

The deceased contract workers are Shri Ganesh Chandra Pahil (Age: 55), Shri Rabindra Sahu (Age: 59), Shri Abhimanyu Sah (Age: 33) and Shri Bramhananda Panda (Age: 51).

Status of Impact on Environment:

Mr. B. D. Behera, Manager CCD was also present at the site with portable CO gas monitor during inspection and CO gas concentration at the close vicinity of the incident site was found to vary from 0 to 35 PPM at about 3.00 PM on 06.01.2021 against permissible limit of CO gas

198 ✓
concentration of 50 PPM in the work zone area. The unit has also installed 4 no. of Online Continuous ambient air quality monitoring stations (CAAQMS) for monitoring PM10, PM2.5, SO2, NOx & CO. The CO monitoring data of three CAAQMS i.e Station-2: Fertilizer Hospital, Sector-22, Station-3: SSSY Building, Rourkela Steel Plant and Station-4: ERW Pipe Plant, Rourkela Steel Plant is enclosed as Annexure-I for reference. Data of Station-1(Indo German Club) is not taken into consideration as it was located far away from the plant premises. From the date of CAAQMS, it revealed that concentration of CO at the ambient air is within the prescribed standard of 4 mg/m³ (1hour).

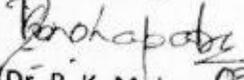
Remarks

Although gas line was purged with nitrogen, it seems that there might have been pocket formation of CO gas and workmen got exposed to it during removing the bolts of the flange joints in subject pipeline. It is apprehended that the remaining gas from the isolated pipe line may have escaped to the atmosphere through the opened flange joints within few minutes and got diluted.

It was also learnt that, a high level committee has been formed by the RSP to inquire into the cause of the incident and to recommend remedial measures to prevent re-occurrences. In the mean time management of Rourkela Steel Plant has suspended the following Officers:

1. Shri Nabendu Das, Dy. General Manager, Coal Chemicals Department
2. Shri Gopabandhu Barik, Dy. General Manager, Energy Management Department
3. Shri Smruti Ranjan Sahoo, Asst. Manager, Safety Engineering Department

Counter Signed


(Dr. P. K. Mohapatra) 07/01/21
Regional Officer


(Er. D. K. Sahoo)
Dy. Env. Engineer

✓ 7 Annexure-I 189

CO monitoring result of CAAQMS of Rourkela Steel Plant

Rourkela Steel Plant				
Average Report				
Report Created by OSPCB on 2021-01-08 11:13:00				
Sl No.	Time	AAQMS_2-CO(mg/m3)	AAQMS_3-CO(mg/m3)	AAQMS_4-CO(mg/m3)
1	2021-01-06 06:00:00	0.64	0.66	0.56
2	2021-01-06 06:15:00	0.69	0.66	0.56
3	2021-01-06 06:30:00	0.74	0.66	0.56
4	2021-01-06 06:45:00	0.33	0.66	0.56
5	2021-01-06 07:00:00	0.17	0.66	0.56
6	2021-01-06 07:15:00	0.17	0.66	0.56
7	2021-01-06 07:30:00	0.17	0.66	0.56
8	2021-01-06 07:45:00	0.17	0.66	0.56
9	2021-01-06 08:00:00	0.17	0.66	0.56
10	2021-01-06 08:15:00	0.17	0.66	0.55
11	2021-01-06 08:30:00	0.17	0.66	0.55
12	2021-01-06 08:45:00	0.17	0.66	0.55
13	2021-01-06 09:00:00	0.17	0.66	0.55
14	2021-01-06 09:15:00	0.17	0.66	0.55
15	2021-01-06 09:30:00	0.65	0.66	0.55
16	2021-01-06 09:45:00	0.74	0.66	0.55
17	2021-01-06 10:00:00	0.74	0.66	0.55
18	2021-01-06 10:15:00	0.74	0.66	0.56
19	2021-01-06 10:30:00	0.74	0.66	0.58
20	2021-01-06 10:45:00	0.74	0.66	0.59
21	2021-01-06 11:00:00	0.75	0.66	0.58
22	2021-01-06 11:15:00	0.76	0.66	0.58
23	2021-01-06 11:30:00	2.19	0.66	0.58
24	2021-01-06 11:45:00	2.46	0.66	0.42
25	2021-01-06 12:00:00	2.12	0.66	0.54
26	2021-01-06 12:15:00	1.68	0.66	0.54
27	2021-01-06 12:30:00	2.3	0.66	0.54
28	2021-01-06 12:45:00	2.59	0.66	0.53
29	2021-01-06 13:00:00	1.4	0.66	0.53
30	2021-01-06 13:15:00	2.09	0.66	0.53
31	2021-01-06 13:30:00	2.13	0.66	0.53
32	2021-01-06 13:45:00	0.74	0.66	0.53
33	2021-01-06 14:00:00	0.37	0.66	0.53
34	2021-01-06 14:15:00	0.43	NA	0.51
35	2021-01-06 14:30:00	0.14	NA	0.24
36	2021-01-06 14:45:00	0.19	NA	0.24
37	2021-01-06 15:00:00	0.33	0.66	0.24
38	2021-01-06 15:15:00	NA	0.66	0.24
39	2021-01-06 15:30:00	NA	NA	0.24
40	2021-01-06 15:45:00	0.05	NA	0.24
41	2021-01-06 16:00:00	0.62	NA	0.24
42	2021-01-06 16:15:00	1.94	NA	0.24
43	2021-01-06 16:30:00	2.3	NA	0.24
44	2021-01-06 16:45:00	2.75	NA	0.24
45	2021-01-06 17:00:00	2.78	NA	0.24
46	2021-01-06 17:15:00	2.55	NA	0.24
47	2021-01-06 17:30:00	2.89	0.66	0.36
48	2021-01-06 17:45:00	2.71	0.66	0.48
49	2021-01-06 18:00:00	1.67	0.66	0.54
50	2021-01-06 18:15:00	2.09	0.66	0.55
51	2021-01-06 18:30:00	1.51	0.66	0.55
52	2021-01-06 18:45:00	2.77	NA	0.55
53	2021-01-06 19:00:00	1.8	0.66	0.54

No. 14 / Dated, the 06/01/2021

To

The Director of Factories & Boilers,
Odisha, Bhubaneswar.

Sub:-

Preliminary investigation report into fatal accident to four workers
of M/s Star Construction a contractor under M/s Rourkela Steel Plant
which occurred on 6.1.2021 at M/s Rourkela Steel Plant, Rourkela.

Sir,

On receipt of the telephonic information from the management, the
undersigned along with the Dy. Director of Factories & Boilers, Rourkela Division visited
the incident spot and investigated into the above incident. Please find enclosed herewith
the preliminary investigation report for favor of kind information and necessary action.

Encl:- As above.

Yours faithfully,

[Signature]
6/1/2021
Asst. Director of Factories & Boilers,
Rourkela Zone-I, Rourkela.

Memo No. 15 / Dated, the 06/01/2021

Copy submitted to the Under Secretary to Government, Labour & ESI
Department, Odisha, Bhubaneswar for favour of kind information.

[Signature]
6/1/2021
Asst. Director of Factories & Boilers,
Rourkela Zone-I, Rourkela.

Memo No. 16 / Dated, the 06/01/2021

Copy to the Collector and District Magistrate, Sundargarh for kind
information.

[Signature]
6/1/2021
Asst. Director of Factories & Boilers,
Rourkela Zone-I, Rourkela.

Copy submitted to the Dy. Director of Factories & Boilers, Rourkela
Division, Rourkela for information.

[Signature]
6/1/2021
Asst. Director of Factories & Boilers,
Rourkela Zone-I, Rourkela.

o/c

PRELIMINARY INVESTIGATION REPORT

1. Name and address of the factory : M/s Rourkela Steel Plant,
Rourkela-769011, Dist-Sundargarh.
(Regn.No.SG-28)
2. Date & time of incident : 06.01.2021 at about 09:15 AM
3. Date & time of investigation : 06.01.2021
4. Name & details of the victim :
 1. Bramhananda Panda
S/o-Baidhyanath Panda
Age-51 Years, Sex-Male
Designation-Supervisor
Present Address
At-Golghar, PO-Rourkela-2, PS-Sector-7,
Dist-Sundargarh,
Permanent Address
At-Pratappur, Sasan, PO/PS-Pegarpa-DA, Dist-Kendrapra
 2. Abhimanyu Sha
S/o-Macha Sha
Age-33 Years, Sex-Male
Designation-Semi Skilled Worker
Present/Permanent Address
At-Kulamunda, PO/PS-Lathikata, Dist-Sundargarh,
 3. Ganesh Chandra Pahil
S/o-Phagu Pahil
Age-55 Years, Sex-Male
Designation-Semi Skilled Worker
Present Address
At-Construction Colony, Qrs No.263, PO/PS-Tangarpali,
Dist-Sundargarh,
Permanent Address
At-Chandura, PO/PS-Jagatsinghpur
 4. Rabindra Sahoo
S/o-Ratnakar Sahoo
Age-59 Years, Sex-Male
Designation-Semi Skilled Worker
Present Address
At-D/98, Construction Colony, PO/PS-Tangarpali, Dist-Sundargarh,
Permanent Address
At-Totapada, PO/PS-Bansagada, Dist-Bhadrak
5. Regular or contract labour (If contractor labour details of the contractor) : Contractor labour of M/s Star Construction a contractor of M/s Rourkela Steel Plant.
6. Location of the incident : CO gas line, Gas mixing tank area, Site A and CCD, Rourkela Steel Plant, Rourkela
7. Brief facts of the accident :

A planned preventive maintenance job was taken up for replacement of 30 meters of Coke Oven gas pipeline (size 1500 mm Dia.) & cladding at T-piece (size 800 mm dia.) at an height of about 6 meters on the Gas Mixing Tank bypass line at Coal Chemicals Department of Rourkela Steel Plant on 06/01/2021. The contractor M/s Star Constructions was engaged for the above maintenance work.

Four contractor workers Bramhananda Panda, Supervisor, Abhimanyu Sha, Semi Skilled Worker, Ganesh Chandra Pahil, Semi Skilled Worker, Rabindra Sahoo, Semi Skilled Worker of M/s Star Constructions joined their duties in 'A' shift at about 6:00 AM. They were engaged for blanking of the above Coke Oven gas pipe line. At about 9:15 AM, Abhimanyu Sha and Rabindra Sahoo went upto the Coke Oven gas pipe line flange platform, which is at above 6 mtr elevation. While opening flange bolts of CO gas line for blanking, suddenly some entrapped gas rushed out affecting the above two workers. They became unconscious. The other two workers, Bramhananda Panda and Ganesh Chandra Pahil who were at ground floor noticed them and went to the above platform. They also got affected and became unconscious due to the above gas. All four workers were rescued and shifted to the OHS Centre situated inside the Plant, thereafter they were taken to IGH, Rourkela for further treatment, where doctors declared them dead at about 11:40 AM

Prima facie, it appears that they all have got affected due to the entrapped gas in the coke oven gas pipe line. The final investigation report shall be submitted after completion of the investigation.

8. Action taken under the
Factories Act
- a. Prohibition order invoked Yes
 - i. If yes, letter number & :
 date
 - ii. If not, reason thereof :
 - b. Any other actions :

Law 6/1/2021

Asst. Director of Factories & Boilers,
Rourkela Zone-I, Rourkela.

Action taken after CCD incident

1. Permit To Work reviewed and filled up in addition to safety protocol on daily basis just before starting the work in gas line job.
2. Safety Consultant of National / Global reputation is being engaged to improve safety culture.
3. Frequency of Gas Safety Training programme with Hands-on-Training of Gas Safety equipments for regular employees increased from one day/ week to two days /week. 113 nos of regular employees and 629 nos contractual employees covered in January, 21. In financial year 2020-21 till Dec total 835 regular employees and 8442 contractual employees have been covered under this programme.
4. Healthiness of Gas line has been re-checked at CCD and remedial actions are planned for implementation on priority as per schedule. Replacement of COG line to bleeder stacks and gas holder near railway track in site-A has been completed.
5. Additional Gas safety signages of 45 nos displayed in local language in CCD area. Other departments, in similar manner, will be completed by Feb'21 end.
6. Communication meeting / discussion was organised with all senior officials, DSOs, ASOs, in presence of Dy. Director of Factory & Boiler and Asst. Director of Factory & Boiler Govt. Of Odisha. Similar exercise will be organised in future regularly.
7. Round the clock safety, Fire services & EMD supervision ensured / strengthened during execution of gas line job.

**Interim report on gas line incident dt: 06/01/2021 at RSP, Rourkela
as on 14.01.2021**

Incident

Four contract workers of M/s Star Constructions working in the Coal Chemicals Department of SAIL, Rourkela Steel Plant felt unwell at about 9.20 AM on 6th January 2021. All of them were immediately shifted to the Plant OHS Centre situated inside the Plant and thereafter to Ispat General Hospital. They were taken to the ICU for intensive medical care and their condition was keenly monitored. However, in spite of all possible efforts, the lives of the contract workers could not be saved. The doctors declared them dead at 11.40 AM.

The deceased contract workmen were Shri Ganesh Chandra Pahil (Age: 55), Shri Rabindra Sahoo (Age: 59), Shri Abhimanyu Sha (Age: 33) and Shri Brahmananda Panda (Age: 51)

Background

A planned preventive maintenance job was taken up for replacement of 30 meters Coke Oven gas pipeline (size 800 mm dia) and cladding at a T-piece (size 800 mm dia.) at the Gas Mixing Tank (GMT) bypass line at Coal Chemicals Plant of Coke Ovens Department on 06/01/2021. The procedure cum Safety protocol was duly approved on 04/01/2021 by the HoD, Coke Oven Department, RSP. The job was assigned to M/s Star Constructions.

The job was planned within a specified localized area of Coal Chemical Dept and accordingly isolated from the main network. The contract workmen were given gas safety training in December 2020. Duly approved gas safety protocol was available at site. All four "U" seals and "Drum" seals were found to be raised properly. All five isolation valves were found closed. The connected pipelines were found in depressurized condition. The gas line was purged with nitrogen and the gas concentration was checked and found within norm before start of the job. Gas safety appliances like CABA and CO monitors were issued to the concerned agency. Fire brigade personnel were present at the site. Mobile crane was placed at site for dismounting and erection job.

Replacement of a pipe line or its components is a routine job. In this case, it was not an incident involving gas leakage. It is a localized exposure of entrapped pocket of gas during schedule preventive maintenance work in a pipeline, which was purged with nitrogen, an inert gas. The persons involved in the job might have taken off their face shield momentarily for ease of work.

No environmental damage took place. Other than those four workmen, no other person present in and around the place had any adverse effect on their health. Before, during and after the incident, the functioning of the entire Plant continued to be normal.

Action taken so far

1. The next of kin of all four deceased persons each have been offered with permanent job at RSP, one time compensation of about Rs 8 lakh, besides monthly pension of Rs 8000/- and other incidental expenses
2. 3 RSP executives were suspended, pending enquiry and continue to remain so.
3. RSP constituted a high level Enquiry Committee immediately after the incident on 06.01.2021 morning.
4. On the basis of recommendations of enquiry committee constituted by RSP, HoD of Coal Chemical Department has been show caused.
5. SAIL Corporate Office has constituted a senior level expert committee on 06.01.2021.
6. Activities of the Contractor viz, M/s. Star Construction has also been suspended at RSP immediately.
7. Interaction of local statutory authorities with Factory Managers and DSOs of RSP was organized in presence of all senior officials.
8. Additional signage in local language is being readied for display in all prominent places along with Do's & Don'ts.

ANNEXURE

SAIL RSP

Information Report to CPCB

Four contract workers of M/s Star Constructions working in the Coal Chemicals Department of SAIL, Rourkela Steel Plant felt unwell at about 9.15 AM on 6th January 2021. All of them were immediately shifted to the OHS Centre situated inside the Plant and thereafter to Ispat General Hospital. They were taken to the ICU for intensive medical care and their condition was keenly monitored. All emergency protocols were immediately activated. However, in spite of all possible efforts the lives of the contract workers could not be saved. The doctors declared them dead at 11.40 AM.

The deceased contract workers are Shri Ganesh Chandra Pahil (Age: 55), Shri Rabindra Sahoo (Age: 59), Shri Abhimanyu Sha (Age: 33) and Shri Brahmananda Panda (Age: 51)

A planned preventive maintenance job was taken up for replacement of 30 meters Coke Oven gas pipeline (size 1500 mm dia) and cladding at a T-piece (size 800 mm dia) at the Gas mixing tank bypass line at Coal Chemicals Plant of Coke Ovens Department on 06/01/2021. The job was awarded to the above agency.

The above job was planned as a preventive maintenance within a specified localized area of Coal Chemical Dept. Other areas of the Plant continued to function normally.

The procedure cum Safety protocol was duly approved on 04/01/2021 by the HoD, Coke Oven Department, RSP. Before the start of the job, as per procedure, the line was water sealed and purged with nitrogen. Both sides of the subject portion of the pipeline were isolated by closing the valves. The contract workmen were provided with gas mask and CO gas monitoring meter apart from other safety appliances. Fire brigade personnel were also present at the site. CO gas concentration was checked and found within norm. There was no gas leakage. This was a routine job and environmental situation continued to be normal.

Prima facie, it appears that although the gas line was purged with nitrogen, there might have been formation of pocket of entrapped gas and the workmen got exposed to it during removing the bolts of the flange joints in the subject pipeline.

Level of Damage caused:

- a) No environmental damage as there was no gas leakage
- b) No damage to any equipment
- c) Human health : 4 persons deceased as given above. No injury to any other person. Situation is normal. Rourkela Steel Plant functioning is normal.

Meanwhile, the next of kin of all four deceased persons are being provided with permanent job at RSP and other compensation as per the company procedure.

वामन शर्मा
8-1-21

Action taken / being taken :

- a) Pending enquiry, 3 executives related to the job have been suspended.
- b) A Plant level Enquiry committee has been constituted immediately with three Chief General Managers of different discipline to inquire into the cause of the incident and recommend remedial measures to prevent recurrences.
- c) In addition, A high powered Corporate level Enquiry Committee has also been constituted by SAIL.
- d) The activities of the Contractor viz, M/s. Star Construction has also been suspended at Rourkela Steel Plant, pending enquiry.

This is not an incident involving gas leakage. It is a localized release of entrapped pocket of gas during schedule preventive maintenance work in a pipeline, purged with nitrogen, which is an inert gas. It is to mention that all sections of Coal Chemical Dept and other production units of Rourkela Steel plant have remained normal before and after the time of incident.

पुनः जांच
2-1-21

LEGENDS (LINE DIAGRAM OF CCD GMT AREA)

B1	COG from Final Gas Cooler-C in Site C	To be blanked first.
B2	COG gas inlet line to new Gas Mixing Tank	To be blanked secondly.
B3	COG from Final Gas Cooler-A and B in Site C	To be blanked next.
B4	New mixed gas bypass line	To be blanked at the end
V1	Mixing tank outlet valve	Close
V2	COG inlet to gas Mixing Tank	Close
V3	BF Gas Inlet to gas mixing tank	Close
V4	COG line valve from FGC-A to new GMT at Site C	Close
V5	COG line valve from FGC-B to new GMT at Site C	Close
V6	New mixed gas by-pass line valve	Close
W/S 1	COG from new CCD to new gas mixing tank	Sealed
W/S 2	LDG to new gas mixing tank	Sealed
D/S 3	New Mixed gas line connected to A line	Sealed
W/S 4	New Mixed gas line connected to new PM line	Sealed
W/S 5	New Mixed gas line connected to new RM line	Sealed

LINE DIAGRAM OF CCD GMT AREA

