ENCLOSURE XV: SAFETY MEASURES FOR AMMONIA STORAGE

- **Ammonia Storage Tank (10 TO1)**

Liquid ammonia received from ship is stored in the ammonia storage tank having a net / effective capacity to store 10000 MT of liquid ammonia excluding vapor space and dead level of pumps suction. The storage tank is double walled, double integrity type, also known as "Cup-in-Tank". The tank consists of cup inside with outer shell insulated from outside. The annulus between the cup and outer tank normally consists of ammonia vapor. The roof is bare and painted outside. Suspended deck with insulation is provided inside tank. The outer tank shell is designed for full strength to hold liquid ammonia at (-)33°C for double safety. The outside of the tank is insulated with rigid polyurethane insulation foamed in-situ (PUF) and covered with aluminium cladding. The bottom has foam glass , which is a load bearing insulation. The cup is covered with suspended deck with resin bonded glass wool insulation.

The tank is equipped with two pilot operated pressure relief valves and two vacuum relief valves to safeguard the tank against overpressure or vacuum. (Isolation valves are provided with suitable mechanical interlock). A quick closing valve in pump suction line is interlocked to close on high liquid level in annulus as compared to cup level. This valve is also provided with local/remote push buttons for closing in case of any emergency.

The tank rests on elevated foundation slab supported on concrete columns to permit free air passage below the tank and avoid freezing below ground.

The tank is provided with a ladder for going inside the cup. A staircase tower with platform leading to tank top is provided for approach to the nozzles, on the roof.

- Storage Tank Capacity

Net Ammonia Storage : 10000 Metric Tonnes
Capacity / Tank No. of storage Tanks : One
Type : Double Integrity, Cup-In-Tank
Operating Temperature : -33°C (approximately)
Operating Pressure : 225 to 1100 mmWC

- **Ammonia Storage Tank**

Tank ID, m	34.6
Cup ID, m	33.0
Tank height, m	19.008
Cup height, m	18.190
Effective volume, rri-3	14695
Maximum filling level, m	17.640 at —33°C
Operating pressure, mmWC	225-1100
Operating temperature, °C	-33
Design pressure, mmWC	1500 / -50
Design temperature, °C	-46 / 55
Safety valves SV10204A/B (set pr. /cap.)	1450mmWC/1480mmWC, 3397 kg/h ,
Vacuum relief valves VRV10201A/B (set pr./cap.)	-45 mmWC/ -40 mmWC, 2012 kg/h
Test pressure , mmWC	Cup : water filling Tank : pneumatic 1875 / -50
Filling rate (max), m 3/h	931
Emptying rate (max), i-r-13 /h	66

- **Ammonia Compressors**

The ammonia compressors 10 KO1A/B/C/D (3 running + 1 standby) are of York make, oil lubricated, screw type with interstage feeding facility. The compressors have a refrigeration capacity of 1,41,340 Kcal/h each. The compressors are required to be run while importing liquid ammonia from the ship to receive the same in storage tank (Unloading operation) and also for the pressure holding operation. The holding load shall comprise of boil-off, heat load of the connected piping and pump minimum bypass flow. The material of construction of the compressor casing is of carbon steel.

Normal operating pressures for main suction, and inter stage suction .of unloading compressors (10 KO1A/B/C/D) are 1.1 and 1.9 kg/cm2a respectively and final discharge pressure of all the compressors are 17.29 kg/cm2a corresponding to condensing temperature of 43°C. For main suction, operating temperatures is (-)25°C.

These compressors are direct coupled, electric motor (2 pole, LT, 160 kw, 2970 rpm) driven. Each of the compressors is provided with lube oil system, oil coolers, primary & secondary oil separators.

Quantity	3 + **1** (standby)
Refrigeration capacity, kcaVh	**1,41,340** each
Flow at suction, kg/h	459
Suction temperature, °C	-25
Suction pressure at compressor flange, kg/cm2 a	1.105
Discharge pressure, kg/cm2 a	17.29
Condensing temperature, °C	43
POMpressor speed, motor KW	2970, 160

- **Flare System**

One no. flare 10 U04 system is provided for venting / flaring ammonia vapor and maintain tank pressure in case of an emergency like power failure or / and compressors failure. It consists of two pilot burners and an integrated gas seal to deter the flame flash back. It is also provided with a flame front ignition panel to enable lighting of the pilots from ground level. The flare is designed for a maximum flow of 1,0,00h of ammonia gas. Fuel gas (LPG) & N2 will be provided for operating the Flare. The tip of the flare is located 30 j:rVrom ground and vent gases are released through a riser pipe.

- **Fire fighting system**

Basic Fire fighting system consist of fire water tanks and pumping system, fire hydrant and monitor system, manual water spray / water curtain system and portable fire extinguishers.

1. Hydrant and monitor system: Six water hydrant points and two water monitors are provided around the entire storage, reliquefaction, tanker loading and preheating area.

2. Manual water spray / water curtain system : Manual water spray is provided around the road tanker loading station and on top platform of storage tank. Water curtain is provided around pump block and compressor house.

3. Fire water tanks

Type : Cylindrical — vertical — open top
Capacity : 300 m3 each (actual requirement 180 m3), 2 nos.
Fire water pumps
Quantity : Two main pumps, one electric driven other diesel engine driven.
One Jockey pump, electric driven
Discharge head : 88 mlc (for all)
Capacity : 273 m3/h each for main pump
10.8 m3/h for jockey pump
Speed, rpm / Motor kW : Main pump (Electric) 2900 / 132
(Diesel) 1450 / 115
Jockey pump 2900 / 15

4. Status for Fire Extinguisher:

i. CO_2 type FE (4.5 kg): 15 nos.
ii. DCP FE 50 kg – 2 nos.
iii. Foam type FE (9 lit): 10 nos.

5. Ammonia gas Detector: 12 nos.

- **Ship Unloading**

Prior to ship unloading, for precooling the ship unloading line, liquid ammonia at -33°C from the storage tank will be pumped by 10P02A/B (any one operating) through ship unloading line 16" ALHL-10106 up to the jetty. This ammonia liquid comes back through the pre-cooling line 4"-ALHL-10107 to the storage tank. During this operation XV10201 and HV10202 are kept closed and reliquefaction module is either kept in 'Auto' mode or operated manually by starting the compressors based on tank pressure values.

OritiOn is also provided so as to send this liquid ammonia through the 4"- Ay-IL-10107 line upto jetty and taking it back to the storage tank through 16"-ALHL-10106 line keeping XV10201 & HV10202 open. During this operation HV10204 and its' bypass valve will be kept closed.

Once the ship unloading line is cooled upto the desirable temperature (about 4 —30 °C) then the ship unloading can be started after proper connection of marine unloading arm and the ship manifold.

Care should be taken to ensure proper berthing of ship at the jetty and proper connection of the marine unloading arm with the ship manifold before the transfer operation starts. Manning at the jetty with walkie-talkie is required for communication with the control room personnel. This will help to ensure immediate control on pump discharge flow rate in case of abrupt pressure / temperature built up in the storage tank. The cross country pipeline also needs to be inspected at regular interval being in an open and unprotected area for most of its stretch. In case the inlet valves XV10201 or HV10202 gets closed due to some interlock acting on it (high level in tank / last compressor trip), immediate communication to the ship personnel should be done so to avoid back-pressure on the pump flange for flash back protection and pilot burners operating on support fuel gas (LPG).

It is not envisaged to run flare under normal situation as tank is already provided with multi level of safety against over-pressure before manual/automatic venting is required. Only during ship unloading case, if there be any power cut, pilot burners can be kept on. Nitrogen purging needs to be done before starting the flare to avoid any residual air-ammonia mixture in the flare stack.

C) DESCRIPTION OF INTERLOCKS AND ALARMS

S.No.	Tag No.	Description	Action	Alarm		Set Point for Alarm	Set Point for Trip with Alarm		Remarks
				High	Low		High	Low	
1.	PIAH_1 10203 or PIAH_2 10203	Tank Pressure Indication from header	On tank pressure high, alarm appears on PC/PLC	Yes		1150/1200 mmWC			
1A.	PIAHH 10203 Or PSAHH 10204	Tank Pressure Indication from header Pressure switch on Tank header	On tank pressure high high XV 10201, HV 10202, HV 10204 closes				1250 mmWC		INTERLOCK NO.1
2.	PIAHHH_2 10203 or PRAHHH10205	Tank pressure alarm in control room	On tank pressure high high high HV10205 opens fully to vent				1350 mmWC		INTERLOCK NO.5
3	PRAH 10205	Tank pressure alarm in control room	On tank pressure reading this value, close HV10205				1275 mmWC		INTERLOCK NO. 5A
4	PSAL_1 10205	Tank pressure indication from header	On tank pressure low alarm on PC/PLC		Yes	220 mmWC			
4A.	PSAL_2 10205	Tank Pressure	Low Low Alarm		Yes	210 mmWC			
5.	PSALL_1 10205 or PSALL 10228	Tank pressure indication from header.	On tank pressure low Compressors trip					200 mmWC	INTERLOCK NO. 6
6.	PSALLL 10205 or PSALLL 10206	Tank pressure indication from header	On tank pressure low low low a) FV10401 closes & b) Pumps 10 P02 A/B & 10 P01 A/B trips					100 mmWC	INTERLOCK NO.2
7.	PSAL 10212 A/B	Pump discharge pressure alarm in control room	If the pump 10P02A/B fails to develop head in one minute, it trips the corresponding pump					11.6 kg/cm2 (g)	INTERLOCK NO.4 A/B

S.No.	Tag No.	Description	Action	Alarm		Set Point for Alarm	Set Point for Trip with Alarm		Remarks
				High	Low		High	Low	
7A	PSAL 10212 C/D	Pump discharge pressure alarm in control room	If the pump 10P01 A/B fails to develop head in one minute, it trips the corresponding pump					10.2 kg/cm2 (g)	INTERLOCK NO.4 C/D
8.	XZAHL 10203	Limit switch on the ON/OFF valve XV 10203 located on pump suction nozzle of 10T-01.	If valve is not fully open, pumps 10P01 A/B, 10P02 A/B trip.						INTERLOCK NO.3
9.	LIAHL 10203	Level indication of the tank cup in the Control Room		Yes	Yes	16635 mm 1695 mm			
10.	LIAHHLL 10204	Level indication of the tank cup in the control room	1) On tank level high high XV 10201,HV10202,HV10204 close. 2) On tank level low low, pumps 10 P01 A/B & 10 P02 A/B trip(s)				17750 mm	580 mm	INTERLOCK NO.1 INTERLOCK NO.2
11.	LIAH 10201	Level indication of the tank annulus in the Control Room	On annulus level high, alarm appears on PC /PLC	Yes		300 mm			MANUAL DRAINING OF ANNULUS TO BE IMMEDIATELY STARTED.
12.	LIAHH 10202	Level indication of the tank annulus in the Control Room	On annulus level high high, alarm appears on PC /PLC	Yes			350 mm		MANUAL DRAINING OF ANNULUS TO BE IMMEDIATELY STARTED.
12A	LIAH10201, LIAHH10202, LIAHHLL10203,	Level in annulus (LIAH10201 and 10202) and level in cup (LIAHH10203)	If any one of the level indication in annulus is higher than that in cup XV10203 closes	-	-		Diff. in level > 0		INTERLOCK NO.22

S.No.	Tag No.	Description	Action	Alarm		Set Point for Alarm	Set Point for Trip with Alarm		Remarks
				High	Low		High	Low	
13									
14.	PSAH 10203.1 or PSAH 10205.1	Compressor suction pressure	Starts the Base load compressor through selector switch.	Yes		400 mmWC			START LOGIC No. 16
15.	PSAHH 10203.2 or PSAHH 10205.2	Compressor suction pressure	On pressure high high, starts the peak load-1 compressor through a selector switch.	Yes		600 mmWC			START LOGIC NO. 15
16.	PSAHHH 10203.3 or PSAHHH 10205.3	Compressor suction pressure	On pressure high high high, starts peak load-2 compressor through a selector switch	Yes		800 mmWC			START LOGIC NO. 14
17.	PSAL 10203.4 Or PSAL 10205.4	Compressor suction pressure	On pressure low, trips the peak load-2 compressor					700 mmWC	STOP LOGIC NO. 13
18.	PSALL 10203.5 PSALL 10205.5	Compressor suction pressure	On pressure low low, it gives an audio visual alarm in the control room and trips the peak load-1 compressor					500 mmWC	STOP LOGIC NO. 12
19.	PSALLL 10203.6 PSALLL 10205.6	Compressor suction pressure	On pressure low low low, trips Base load compressor					300 mmWC	STOP LOGIC NO. 11
20.	PSAL10330 A/B/C/D	Pressure switch on compressor suction	On suction pressure low, alarm appears on PC / PLC		Yes	102 mmWC			
20A.	PSALL 10331 A/B/C/D	Pressure switch on compressor suction	On suction pressure low low, the corresponding compressor 10 K01 A/B/C/D trips with an alarm in the control room.					(-)0.51 kg/cm2g	INTERLOCK NO. 8

S.No.	Tag No.	Description	Action	Alarm		Set Point for Alarm	Set Point for Trip with Alarm		Remarks
				High	Low		High	Low	
21.	TSAH 10327 A/B/C/D	Compressor discharge temp	On discharge temperature high, alarm appears on PC/PLC	Yes		105°C			
21A.	TSAHH 10327 A/B/C/D	Compressor discharge temp	On discharge temperature high high, the corresponding compressor 10K01 A/B/C/D trips with pre alarm in the control room.				110°C		INTERLOCK NO. 8
22.	TSAH 10329 A/B/C/D	Temperature switch on the lube oil line after oil cooler	On lube oil temperature high, it gives an alarm in the control room	Yes		60°C			
23A.	PDAL 10329 A/B/C/D	Cooling water differential pressure switch across Oil Cooler of 10K01 A/B/C/D	On cooling water differential pressure low, it gives an alarm in control room		Yes	0.41 kg/cm2g			
23B.	PDSAH 10328 A/B/C/D	Differential pressure across the duplex filter of 10K01 A/B/C/D	On high differential pressure across the filter, alarm appears on PC/PLC and trips any running compressor.	Yes		0.51 kg/cm2g			
23C.	LSAL 10321 A/B/C/D	Oil level in Compressor casing of 10K01 A/B/C/D	On low oil level in Compressor casing, Compressor trips with an alarm. Time delay of 60 sec.					(fixed probe- by YRIL)	INTERLOCK NO. 8
23D.	LSAL 10322 A/B/C/D	Oil level in primary oil of 10K01 A/B/C/D separator	On low oil level, alarm appears on PC/PLC level		Yes	140mm from top flange C/L			
23E.	TSAL 10328 A/B/C/D	Temp of the oil in primary oil separator	On low temp of the oil in primary oil separator will trip the compressor with an alarm. It also starts the oil heater in primary oil separator.					40°C	INTERLOCK NO. 8
23F.	PDSAL 10301A/B	Differential Pressure across water side of Ammonia Condenser 10E02A/B	On low differential pressure, alarm appears on PC/PLC		Yes	0.5 kg/cm2g			

S.No.	Tag No.	Description	Action	Alarm		Set Point for Alarm	Set Point for Trip with Alarm		Remarks
				High	Low		High	Low	
24	DELETED.								
25.	HS-10310	Emergency Stop for Compressor in the field	Trips all running compressors						INTERLOCK NO. 17
26.	HS-10310	Emergency stop for Compressor in panel	Trips any running compressor						INTERLOCK NO. 17
27.	DELETED								
27A	LSAH 10306	Liquid level in vapour separator of the Economiser	High level will give an alarm in control room and close XV10302 and thereafter trips all running compressors				50%		INTERLOCK NO. 22
28.			LV-10301 & PV-10313 closes when last compressor trips and open when first compressor starts						INTERLOCK NO.20
29.			Opening of PV-10313 initiates opening of XV-10301 and full close position of PV-10313 closes XV-10301 after an adjustable time delay of 0-5 min.						INTERLOCK NO.19
30.	PSAH 10332A/B/C/D	Compressor discharge pressure switch	On pressure high alarm in control room	Yes		16.3 kg/cm2g			
30A.	PSAHH 10333 A/B/C/D	Compressor discharge pressure switch	On pressure high high, the corresponding compressor 10 K01 A/B/C/D trips with an alarm in the control room.				17.34 kg/cm2 g		INTERLOCK NO. 8
31.	LICAHL 10301	Level indication of Ammonia Receiver 10V02 in Control Room		Yes	Yes	70% 20%			
32.	LICAHL 10303	Level indication of Economiser 10K01-E01 in Control Room		Yes	Yes	70% 30%			

S.No.	Tag No.	Description	Action	Alarm		Set Point for Alarm	Set Point for Trip with Alarm		Remarks
				High	Low		High	Low	
33.	TRAH 10302	Cooling Water return header from compressor/condenser area		Yes		45			
34.	TIAH 10303	Liquid ammonia at Economiser outlet		Yes		-17			
35.	HS 10207	Emergency stop for transfer pump 10P01A/B & 10P02 A/B in the field / or from PC / PLC	Trips any running transfer pump						INTERLOCK NO. 21
36.									
37.									
38.	PSAL 10502	Pressure in the cooling water supply header	Low pressure in cooling water supply header autostarts the Cooling water standby pump thru timer set					2 Kg/cm^2 (g)	INTERLOCK NO. 25
39.	VSAH 10501	Cooling tower fan vibration	High vibration alarm in control room	Yes		125 micron			
39A.	LSA 10506	Oil level in gear box for Cooling Tower Fan	Low Oil level gives an alarm in PC/PLC		Yes				Float type Level switch povided By vendor
40.	**DELETED**								
41.	TRAH 10503	Cooling water supply temperature	High temp alarm in control room	Yes		36°C			
42.	LSH10504 LSL10505	Cooling tower sump level	High and low level alarm in control room. On High level XV-10501 closes and on low level XV-10501 opens				900 mmWc	400 mmWc	INTERLOCK NO. 34
43.	PIAHL 10509	Instrument air pressure	High and low pressure alarm in the control room	Yes	Yes	7.5 kg/cm2(g) 4.0kg/cm2 (g)			

S.No.	Tag No.	Description	Action	Alarm		Set Point for Alarm	Set Point for Trip with Alarm		Remarks
				High	Low		High	Low	
44.	PIAL 10414	Ammonia preheater E04B shell side pressure	At low pressure, an alarm in control room		Yes	5kg/cm2 (g)			
45.	PIAL 10415	Ammonia preheater E04A shell side pressure	At low pressure, an alarm in control room		Yes	5kg/cm2 (g)			
46.	TRCAL10404	Liq. ammonia outlet temp control to DAP 1 plant	At low outlet temp, alarm in control room and close HIC 10403		Yes	0°C			INTERLOCK NO. 33
47.	TRCAL 10403	Liq. ammonia outlet temp control to DAP 2 plant	At low outlet temp, alarm in control room and close HIC 10404		Yes	0°C			INTERLOCK NO. 32
48.	PSAL 10557A/B	Low lube oil pump pressure for Air comp after oil cooler	Alarm on local panel		Yes	0.56 kg/cm2 (g)			
49.	PSLL 10558A/B	Lube oil pressure after oil cooler	Alarm on local panel and trips the air compressor					0.35 kg/cm2 (g)	INTERLOCK with Inst. Air Comp motor
50.	TSAH 10556 A/B	1st stage discharged air temp	At high temp alarm on the local panel	Yes		180°C			
51.	TSAHH 10557 A/B	2nd stage discharged air temp	At high high temp alarm on local panel and trip the compressor				185°C		INTERLOCK with Inst. Air Comp motor
52.	PSAH 10555A/B	2nd Stage discharge pressure	At high pressure, alarm in local panel	Yes		8.43 kg /cm2			
52A.	PSAHH 10556 A/B	2nd stage discharge pressure	At high High pressure Alarm in local panel and trip the compressor				8.79 kg/cm2 (g)		INTERLOCK with Inst. Air Comp motor
53.	PDSH 10551 A/B	Cooling water differential pressure low after cooler of instrument air compressor	At low differential pressure Alarm on the local panel	Yes		1.5 kg/cm2			
54.	AIH10201, 202, 301, 401, 402	Ammonia Gas detector	For Ammonia gas concentration above 25 ppm, alarm in the control room	Yes		25 ppm			

S.No.	Tag No.	Description	Action	Alarm		Set Point for Alarm	Set Point for Trip with Alarm		Remarks
				High	Low		High	Low	
55.	PS10605	Pressure switch on fire water pump header	Low pressure on header will give start the jockey pump 10P07					6 kg/cm2 (g)	INTERLOCK NO. 28
56.	PS10606	Pressure switch on fire water pump header	High pressure on header will stop the jockey pump 10P07				7kg/cm 2 (g)		INTERLOCK NO. 29
57.	PS10607	Pressure switch on fire water pump header	Low pressure on header will start the main fire water pump 10P06A					5kg/cm2 (g)	INTERLOCK NO. 30
58.	PS10608	Pressure switch on fire water pump header	Low pressure on header will start the stand by diesel engine pump 10P06B if main pump fails to start or main pump fails to build up adequate pressure					4kg/cm2 (g)	INTERLOCK NO. 31
59.	TAL10203 TAL10204	Flame Temperature for Flare System	For low flame temperature an alarm is provided in the control room		Yes	250°C			
60.	PDSAL 10301A/B	Differential pressure at s/c & d/c of cooling water of ammonia vapour condenser	For low diff. pressure alarm in the control room		Yes	0.5 kg/cm2			
61.	FIQAHL10403	Flow of ammonia to DAP1	For Flow rate above/below the set point flow will give high/low alarm in control room	Yes	Yes	10902 kg/h 6814 kg/h			
62.	FIQAHL10402	Flow of ammonia to DAP2	For Flow rate above/below the set point flow will give high/low alarm in control room	Yes	Yes	12946 kg/h 10221 kg/h			
63.	PICAHL 10313	Pressure indication on the Ammonia Receiver	On high & low pressure of the receiver, alarm appears on the PC/PLC	Yes	Yes	17kg/cm2a 14kg/cm2 a			
64.	TRAH 10301	Temp indication on the compressor suction header	On high temp, alarm appears on PC/PLC	Yes		-20°C			
65.	LSAL 10602/10604	Level switch for fire water tanks 10 To 03 A/B	On low level (for CW basin makeup), alarm appears on PC/PLC		Yes	5535 mmWc			
66.	DELETED								
67.		Emergency trip signal from DAP2 plant of HLCL	Trips all transfer and precooling pumps						INTERLCOK NO. 40

S.No.	Tag No.	Description	Action	Alarm		Set Point for Alarm	Set Point for Trip with Alarm		Remarks
				High	Low		High	Low	
68.		Emergency trip signal from DAP1 plant of HLCL	Trips all transfer and precooling pumps						INTERLOCK NO. 41
69.	XV10201	Main valve on ship unloading line near tank	To close XV10201 when the last running compressor trips						INTERLCOK NO. 10
70.	HS10401	Valve on the ammonia laoding line to road tanker.	Valve closes when requisite amount of ammonia thru FIQ10401 is laoded in the tanker. However HS10401 will always overide the interlock 2.						INTERLOCK NO. 38
71		Acoustic fan on compressor noise hood	Tripping of fan gives an alarm on PLC.						

➢ SAFETY ASPECTS OF AMMONIA STORAGE AND HANDLING SYSTEM

- **Ammonia Leak Detection**

The entire plant must be checked continually for ammonia leaks and in case any leakage is detected, it must be rectified as soon as possible.

Leaks in NH3 - storage system are easy to detect. Due to typical pungent smell even the small leaks in the plants are unpleasant.

The following measures can be taken to detect leaks:

A soap water solution is applied to doubtful areas with a brush (Nekal solution). The formation of bubbles indicates leakage.

SO2 blown on to the leaking points through a fine jet will cause white fumes to form.

A saturated aqueous solution of SO2 or hydrochloric acid on to the leaky point by means of a wad of cotton wool will cause the formation of white fumes.

NH3 will turn phenolphthalein paper red / pink.

Alkaline ammonia will turn red litmus paper blue.

- **Safety precautions for handling ammonia**

  * Toxic properties of ammonia

Under normal circumstances, ammonia is a colorless gas and is lighter than air. It is easily recognizable by its extremely pungent odor. Ammonia is easily liquefiable under pressure. At atmospheric pressure saturation temperature of ammonia is about -33°C. It absorbs heat while evaporating.

Foot protection

Rubber ankle or knee boots will give complete foot protection against liquid ammonia. Trousers should be worn outside boots.

Body and skin protection

The degree of body protection required must necessarily for practical reasons, be related to the potential hazards of the job. Liquid ammonia will cause severe burning of the skin. Ammonia gas when in contact with damp areas of the body form ammonium hydroxide which is a strong alkali very corrosive to the skin and it can give quite severe burning.

For optimum protection of the body a number of simple precautions can be taken. Rubber, PVC, or some other type of protective gloves should be worn with the cuff tucked under the sleeve.

'Terylene' boiler suits should be worn in preference to cotton suits. The collar should be kept buttoned, and the suit should be free from rents and holes. If the danger of liquid splashes is great, lightweight PVC suits should be worn. In the event of a major spillage of liquid ammonia, complete body protection is essential before entering the contaminated zone. 'Normal air' make

a two-piece rubber lined textile suit for this purpose which can easily and quickly be put on over the wearer's normal clothes.

Ammonia is easily soluble in water; such solutions can contain up to 35% ammonia (ammonia water). Liquid ammonia, high percentage ammonia water and highly concentrated gaseous ammonia will irritate human skin and cause saver burns. Gas of high concentration will paralyze respiratory organs.

The following are particularly affected :
a) Eyes
b) Mucous membranes (mouth, throat, respiratory ducts, lungs, genitals)
c) Larynx, gullet and stomach

If aqueous ammonia solution is injuries to larynx and lungs which can be fatal. The pungent odour is an adequate warning to run away from the leaky area, since the real danger begins when the endurability limit is exceeded. The maximum permissible concentration in a working area over eight hours is approximately 25 PPM, equivalent to 18 mg/m 3.

Irritation of the larynx and the eyes will become noticeable when the concentration is ten times that of permissible limit. At an ammonia concentration of 0.15%, uncontrollable coughing will set in, and at a concentration of 0.5% paralysis of the respiratory ducts will begin. Concentrations of around 2% will perceptibly irritate uncovered skin. If liquid
ammonia comes in contact with human skin, there is a danger of cold burn. Great care should be exercised when handling ammonia.

A mixture of air and ammonia can be explosive. This is particularly the case, whenever the ammonia content of air at normal temperature and pressure is from 16% to 27% by volume.

ln the presence of other combustible substances, such as hydrogen or acetylene, at higher oxygen contents of air or at high pressures and temperatures, the hazard limits will cover a greater range.

* **Protective measures**

When ammonia is leaking from a piece of equipment or a pipe, the working people shall use breathing air (respiratory equipment) masks and other people move away from the leaky area. The leaky area / zone should be thoroughly ventilated as soon as possible. In view of the fact that ammonia is lighter than air, ventilation by upward draught will be most effective.

If any work has to be carried out in rooms / equipment contaminated with ammonia, for lessening the hazards, respiratory equipment and protective clothing must be used.

In addition, it is important that persons working in rooms contaminated with toxic gases are observed by a buddy standing outside with suitable safety equipment to rescue such persons in emergencies.

Over and above, the personnel working in hazardous area shall use the respiratory equipment and protective clothing covering the whole body.

Such protective clothing comprises:

- A long sleeved working jacket
- Long trousers and underwear (If possible, made from cotton, since
- cotton is more resistant to alkalis than wool)

- Rubber boots
- Rubber gloves
- Protective helmet with rim

The sleeves should be worn outside the rubber gloves and the trousers outside the boots. An ointment or Oil can also protect certain areas of skin.

If necessary, the above mentioned protective clothing can be replaced by a tight anti-gas suit covering the whole body.

* **First Aid**

It is of primary importance to take the injured / ammonia affected of the endangered area as quickly as possible. In case of seriouvirijur injuries to the eyes, a medical practitioner must be summoned at once. – In the meantime, as much ammonia as possible must be eliminated, e.g. by dosing with plenty of water, discarding contaminated clothing including underwear. The patient should then be made to lie down and wrapped in blankets to keep him warm.

A gas mask can be regarded as a limited respiratory equipment, provided there is sufficient oxygen in the breathing air cylinder, the gas mask fits tightly and the special ammonia filter has been screwed into the gas mask. The personnel may enter the contaminated e rooms for a limited period of time if the ammonia content in the room is below 2%. The filter manufacturer's data will give precise information on the time limit, the maximum permissible ammonia concentration and the life of a new gas mask filter whose container
seal has not yet been broken.

Positive pressure air masks offer better protection than filter canister masks as a regulated external source of air (from an instrument air or service air point) is connected to the face mask. Monitoring of air pressure is needed.

A sufficient number of gas masks should be available at all points where ammonia might possibly leak and enable operating personnel to evacuate the leaky area quickly.

If, for any reason, a gas mask is not available, the next best protection will be by holding a wet rag over nose and mouth.
In emergencies, a dry handkerchief or a sleeve will offer some protection. In all such cases, it is important to choose a route of escape against the wind.

The breathing apparatus is used whenever the ammonia concentration exceeds the limit value mentioned above or if it is not known or if it is likely to . increase or if the oxygen content is too low, or if the life of the gas mask filter is likely not to be adequate. Breathing apparatus of the type connected by means of a hose to an air intake located in a non-contaminated area will frequently have too high a line resistance and will mechanically impede both the work and the radius of action. Any. person using such breathing apparatus should, prior to use, ensure that sufficient air is contained in the bottle, the valve is set correctly, the hose connection is properly fixed and the mask fits properly.

Eyes affected by ammonia must immediately be washed with **plenty of clean** water. This can be followed by an eye bath in diluted acetic acid (0.5%) or boric acid (3%), after which the eyes should again be washed with clean water.

If ammonia has been breathed in, inhalation of steam or vinegar vapor is recommended. **Artificial respiration is forbidden.**

If possible, the breathing air should be enriched with oxygen. If Ammonia bearing water has been swallowed the patient may be given milk to drink provided he is fully conscious.

* **Recommended Safety Equipment**

- **General**

Liquid ammonia is a dangerous fluid and its safe handling depends finally upon the intelligent use of the equipment by experienced and fully trained personnel.

All employees should be fully informed of the hazards that may result from a leakage of ammonia either as gas or liquid, and the consequences of improper handling of the equipment. Operators should be trained in the use of the equipment by a competent supervisor, who should satisfy himself that the operator understands not only how to correctly use a properly functioning equipment, but also how to deal with an emergency. A 'spare man' should not be used to replace a normal operator who does not report for duty unless he has been adequately trained.

The management should follow up frequently to ensure that safe practices are followed, the protective equipment is worn when necessary, safety showers, drinking fountains and eye wash bottles, and personal protective equipment are available in good condition for use during emergency and operators are trained in the use of respiratory protective devices and other protective equipment.

- **Personal protection equipment**

Personal protection equipment should not be regarded as substitute for good safe working conditions with properly designed equipment. In certain cases, however, particularly in an emergency, it is the only means of protecting the worker. Also, because of the severe effect of ammonia on the person, partial bodily protection is recommended during certain routine operations to guard against mishap. The degree of bodily protection taken will depend on the magnitude of the hazard.

Eye protection

Goggles should be worn by all personnel entering liquid ammonia storage areas where leaks may occur from pump glands, valves, etc.

Respiratory protection

Exposure to ammonia may occur in tanks during routine cleaning, when the nearby area is contaminated due to leakage / spillage / failure of equipment.
A number of different types of respirators are available; these are described below. Respiratory equipment must be regularly maintained, inspected and cleaned.

a) Chemical Cartridge type respirators

These respirators (such as the 'Puretha') are suitable for protecting the wearer from inhaling disagreeable, but relatively harmless, concentrations of ammonia vapor. They should not be used where there is likely to be a shortage of oxygen in the atmosphere. These respirators will give limited protection where toxic concentrations are encountered, but in such circumstances they should be used as a means of escape only. With this type of respirator only the face and eyes are protected from contact with liquid ammonia and vapor.

b) Air Fed-Face Masks

These masks can be supplied in two types, either a close fitting mask with the air supplied through a control valve on the mask or a hood here a much greater volume of air is supplied than required, the excess leaks away at the edges. The former is used for maintenance or process operations of one time nature for duration; the latter is useful for routine operations which is for short duration but occurs frequently.

The masks may be supplied with air from the factory compressed / breathing air system, a portable compressor, or a bottled supply. In the first two cases care must be taken to ensure that the air is free from oil, mist and dirt. This may be done by means of traps and filters. When a portable compressor is used, the danger of oil mist can be eliminated by 'using a non - lubricated compressor. A filter should still be fitted, however, to remove small dirt particles. There are a number of disadvantages with the air-fed mask of either type.

The working radius is reduced to the length of hose, the hose itself can be an encumbrance, and the means of escape (while still being supplied with air) is limited to the direction of the source of air supply.

Air-fed masks should not be used unless conditions permit safe escape in case of failure of the compressed air supply.

c) Self-contained Breathing Apparatus

This type of apparatus allows the wearer to carry a supply of bottled air with him and thus ensures his complete mobility. Two types are available giving a 30-minute and 2 hour supply, weighing 20 lbs and 40 lbs respectively. This type of equipment is the only suitable equipment to rescue work.

A breathing mask, marketed by 'Normal air' of Yeovil, Somerset, has recently become available which is supplied with air under normal conditions from an external source by means of hose. In addition a 30- minute supply of bottled air comes into operation automatically if the main air supply fails. The advantage .of this equipment is that the wearer is assured of continuous supply of air and has complete mobility if emergency escape is necessary.

When using this type of mask it is important to ensure that the pressure of the main air supply never falls below that of the bottled supply reducing valve exit pressure; otherwise the bottle will empty preferentially.

d) Filter Type Respirators

This type of respirator does not offer protection against gases, and is unsuitable for use when working with ammonia.

Head protection

Hard hats should be worn even if it is considered that there is no danger from falling objects since they will offer protection from liquid splashes.

ENCLOSURE XVI: ONSITE EMERGENCY PLAN

Indorama India Pvt. Ltd.
Haldia

EMERGENCY RESPONSE PROCEDURE
ON-SITE PLAN

VERSION NUMBER: 3.8	VERSION DATE: 10.04.2020

Emergency Response Procedure On-Site Plan

Indorama India Pvt. Ltd., Haldia

Foreword

The On-site Emergency Response Plan has been made for Indorama India Pvt. Ltd. taking considerations of all potential emergency incidents for the site. This document is reviewed & updated once in a year to incorporate the changes & improvements. The plan has undergone changes in July 2016, August 2017, July 2018, June'19 and now in April 2020 to incorporate for the changes in administration, process & company name.

Responsibility

- The responsibility of following guidelines, procedures & instructions lies with all concerned personnel.
- The responsibility of reviewing the booklet periodically & communicating to all stakeholders lies with Fire & Safety dept.

Revision

- This manual has been prepared and ratified on April'20 (Revision 3.8).

Chandra Shekhar Prasad
Factory Manager
Indorama India Pvt. Ltd., Haldia

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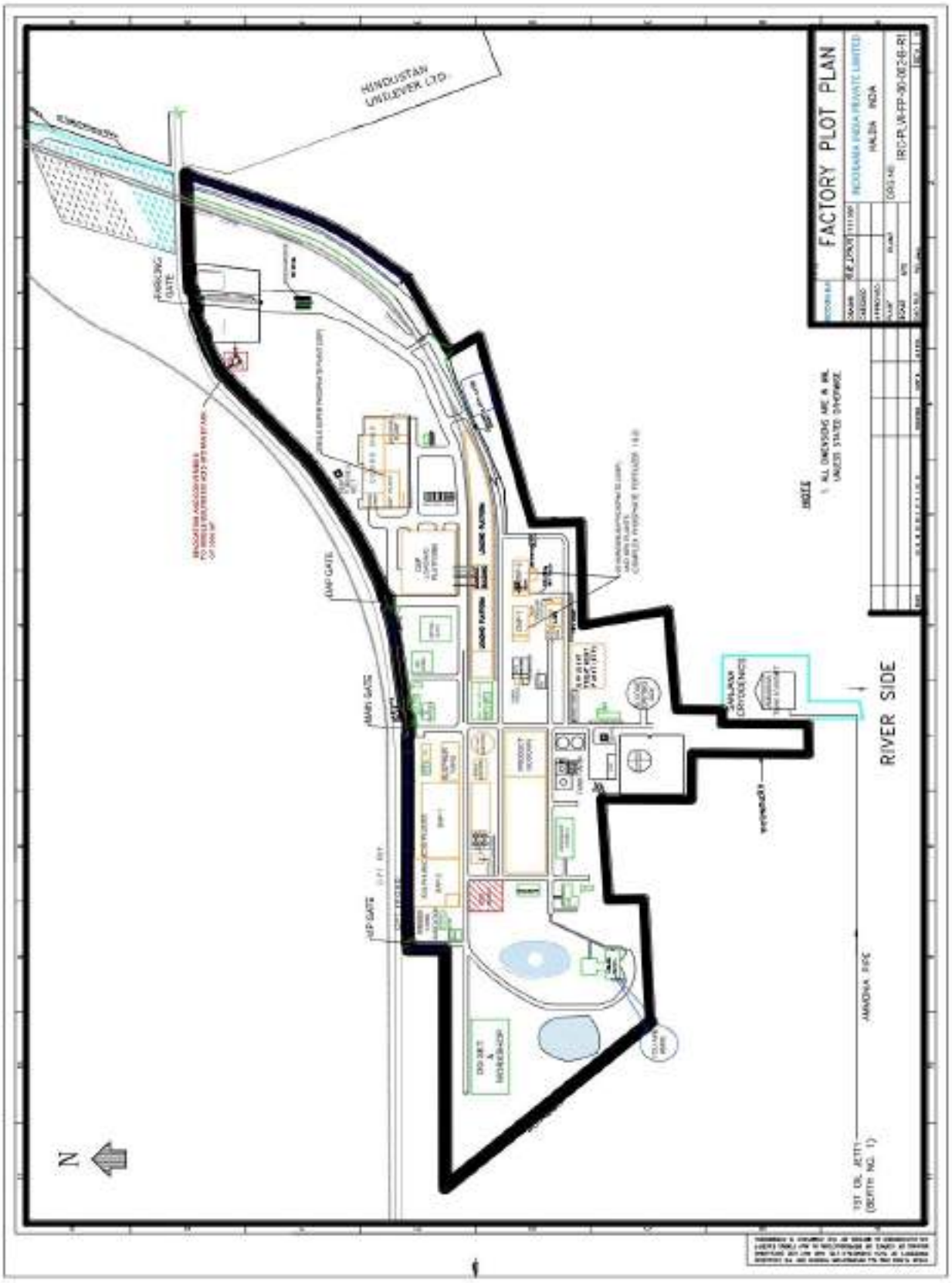

FACTORY PLOT PLAN
HINDUSTAN UNILEVER LTD.
RIVER SIDE
N

INTRODUCTION

This plan has been prepared to deal with a major emergency at Indorama India Pvt. Ltd.,Haldia Factory. A major emergency is defined as an event which affects or threatens to affect either a large number of personnel, or persons beyond the boundaries of the factory. An event, which will cause extensive property damage, is also considered a major emergency.

Following major emergency situations are covered by this plan.

EMERGENCIES IDENTIFIED AT INDORAMA INDIA PVT. LTD., HALDIA

1. Major Release of Ammonia
2. Major Fire in the Sulphur Yard at Factory / Dock Site
3. Major Fire in Tank Farm Area Located next to Store
4. Major Leakage of Sulphuric Acid from Storage Tanks
5. Accidents with Tankers Carrying Hazardous Chemicals
6. Emergency Due to loss, theft, fire, explosion & failure of shutter or damage to the nucleonic gauges.

1.0 SOME IMPORTANT DEFINITIONS

EMERGENCY means a situation or condition leading to a circumstances or set of circumstances in which there is danger to the life or health of persons or which may result in big fire or explosion or pollution to the work and outside environment, affecting the workers or neighborhood in a serious manner, demanding immediate action.

LEVEL-1 EMERGENCY is the emergency in which healthy people would not suffer any long lasting effect except discomfort and property loss.

a) Small spot fire in the plant.
b) Low toxic gas release for short duration.
c) Collapsing of small equipment's.

LEVEL-2 EMERGENCY Significant part of those exposed would be seriously injured or killed.

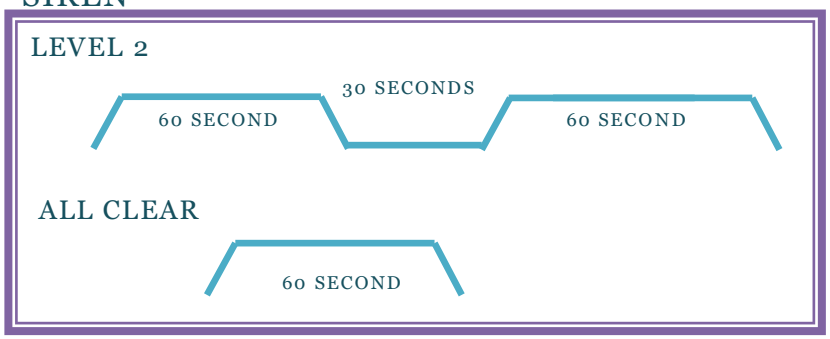
a) Big fire in factory premises.
b) Medium scale explosion.
c) Heavy leakage of toxic gas for short duration.
d) Loss, theft, fire, explosion & failure of shutter or damage to the nucleonic gauges

LEVEL-3 EMERGENCY affects surrounding area beyond the premises.

a) Explosion in high pressure vessel containing toxic/flammable material,
b) Heavy leakage of toxic material for a long duration from pipe line or storage tanks.
c) Flood
d) Severe earthquake warning or striking.

EMERGENCY ALARM is the warbling note produced by the large sirens located at the Factory.

SIREN



EMERGENCY CONTROL CENTRE is the point which the Emergency controller directs the movements of Personnel and equipment during an Emergency. There are two designated Emergency control Centers on the Factory Site:

EMERGENCY CONTROLLER is the person who assumes absolute control of the Factory and determines the action necessary to control the Emergency. He will wear a Red & White Helmet to confirm his identity.

INCIDENT CONTROLLER is the person who goes to the scene of emergency and supervises the actions taken at the incident to overcome the Emergency.

EMERGENCY CONTROL TEAM is the designated group of Senior Managers and practical advisers who assist the Emergency Controller. The team consists of three groups:

EMERGENCY CONTROL CENTRE TEAM which will operate from the Emergency control Centre which comprises of External Communication Team and Control Centre Team.

INCIDENT CONTROL TEAM which remains at the site of incident to bring the event under control.

ASSEMBLY POINT TEAM which guides non-essential personnel at various Emergency Assembly Points.

EMERGENCY ASSEMBLY POINT is a place containing or adjacent to a place containing an internal telephone and paging system, where people can wait in a group to receive instructions from the Emergency Controller.

ROLL CALL LEADERS are the persons who carry out Roll Calls at the Emergency Assembly Points.

2.0 EMERGENCY CONTROL CENTRE

LOCATION

There are two designated emergency control center's at Indorama India Pvt. Ltd., Haldia factory site.

EMERGENCY CONTROL CENTRE-1 [ECC-1] Emergency Control Centre-1 is the main Control Centre located at welfare block (Next to Head-HR, IR).

EMERGENCY CONTROL CENTRE-2 [ECC-2] Emergency Control Centre-2 located in the Administrative Building, ground floor. In the event of the Main Control Centre becoming in-operable, the alternative center room on the ground floor of the Administrative Block.

CONTENTS OF EMERGENCY CONTROL CENTRES

1. Copy of the on-site emergency plan.
2. Emergency Controller's Red & White Helmet.
3. List of Emergency control team (with telephone numbers), who must be called in
4. List of persons trained in First Aid & Fire Fighting.
5. External telephone line and a list of relevant telephone numbers.
6. Internal telephone and telephone list of Emergency Assembly Points.

Site actions

1.0 ACTIONS BY PERSONS FINDING THE EMERGENCY

1. Actuate emergency Manual call point form nearest call point.
2. Dial 666 on internal telephone and give the details of incident to Security and shift manager(Emergency controller)
3. Inform concerned Incident Controller/control room of the Plant
4. Take actions to contain emergency as per applicable plan

2.0 ACTION BY SECURITY

1. After receiving call on emergency telephone no. 666 or upon hearing the emergency hooter & blink on the panel board at main gate, inform shift Manager/Emergency controller for Level-1 Emergency.
2. Send one guard to start the fire pump without waiting for any further information.
3. Attend incoming telephones and obtain details of incident.
4. Await instructions from the Emergency Controller & as per emergency controller direction actuate emergency siren (Declare level-2 Emergency).
5. Upon hearing the emergency siren, guards from the previously identified stations shall rush to gate lodge
6. If an ammonia leak is reported, wait for further instructions from the Emergency Controller. Meanwhile open the ECC (Emergency Control Centre) and keep emergency car & Ambulance ready.
7. If a fire is reported, rush to the location of incident with fire hoses and fight fire under guidance of incident controller. However one guard should remain at gate lodge.
8. Do not admit visitors, but allow employees attending the emergency to enter inside through the gate.
9. Keep the main gate open for movement of emergency vehicles only. Regulate movement of vehicles through the gate. Stop all other traffic and keep the gate clear for the movement of emergency vehicles.

10. Arrange to escort external fire brigade vehicles / ambulances etc. to the incident site as per requirement.
11. Security shall control the traffic inside the factory and speed limit is not applicable during emergency for emergency vehicle movements.
12. Reconcile the Head Count with the help of Time Office for counting number of persons present at that particular instant as per counting system.
13. Deployment of security team during emergency is as follows
    a. Main gate designated shift assistant security officer (ASO) will lead the security team,.
    b. DAP gate designated shift assistant security officer (ASO) will act as foam monitor.
    c. Security Guard Round & Night Patrolling will act as pump operator.
    d. Security Guard at DAP gate & parking gate will act as branch man.
    e. Security Guard at store and HAG will act as water hydrant to Fire Tender.
    f. Security Guard at Phosphoric Acid tank area will act as signal man.
    g. Shift fire man will act as fire tender operator.
14. Quick response team is to search for missing employee in effected area.
15. Security will provide number on employee & contract employee inside the factory.
16. In case of emergency is activated in night security supervisor will inform emergency control team.

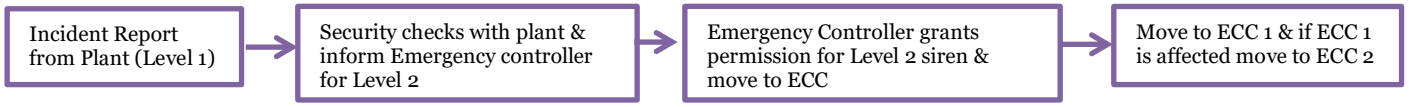
3.0 ACTIONS BY EMERGENCY CONTROL TEAM

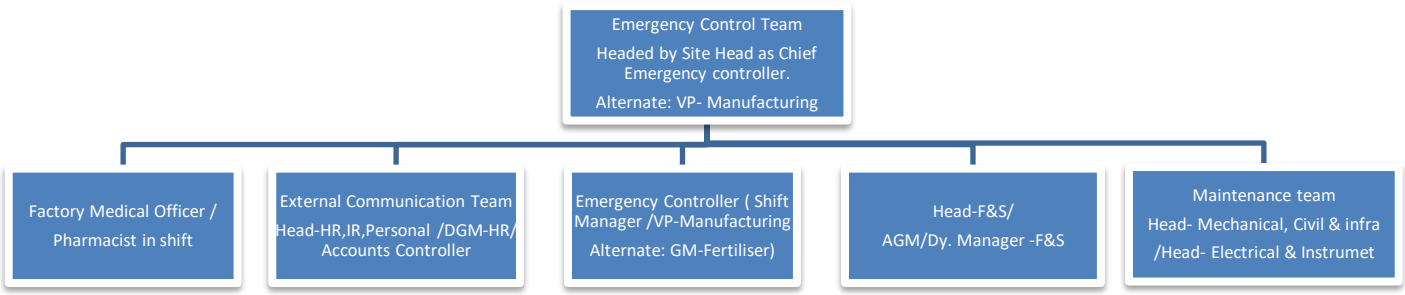
An Emergency Control Team is the designated group of Senior Managers and practical advisers who assist the Emergency Controller. As soon as an emergency is identified and actions are initiated as described above, the Emergency Control Team will assemble at ECC-1 / 2. The following actions will be initiated by the Emergency Control Team which consists of three groups:

Group – 1 EMERGENCY CONTROL CENTRE (ECC) TEAM

The emergency control team is headed by Site head as Chief Emergency Controller & in his absence AVP-Manufacturing will act as CEC.

Emergency Control Centre (ECC) Team shall be overall in-charge of all the activities at site, during an emergency. The team shall be headed by Emergency controller and each member of the team will have a specific function to assist Emergency Controller. Incident Control Team and Assembly point Team also reports to Emergency Controller. In daytime, the members of Emergency Control Centre team should rush to the Emergency Control Center (ECC), immediately after hearing emergency siren. In night time Emergency controller should ask them to proceed to factory.





DUTIES & RESPONSIBILITIES OF THE CHIEF EMERGENCY CONTROLLER

1. As soon as he receives the information of the incident, he shall proceed to the Emergency Control Centre and take charge as CEC.
2. The Chief Emergency Controller (CEC) shall have overall responsibility for directing and bringing emergency situation under control
3. If required, he may call help from outside emergency services and mutual help ,
4. Chief Emergency Controller may ask any executive to carry out a particular task with responsibility.
5. Continually review and assess that suitable actions are being taken
6. Direct the safe shut down and evacuation of plants in consultation with the incident controller and key personnel. If necessary, arrange for evacuation of neighboring population.
7. Ensure that casualties are receiving adequate attention. Arrange for hospitalization of victims and additional help, if required. Ensure that the relatives are advised.
8. Ensure the accounting for personnel and rescue of missing persons.
9. Check that all non-essential workers, visitors and contractors are evacuated to assembly points and shifted to safe place if required.
10. He may give instructions to the Fire Fighting and call second line/ third line of defense personnel. Advise Head - HR & Admin if necessary, to issue authorized statements to the news media. Where necessary, inform head office.
11. In case of offsite emergency or situation developing towards that inform District Emergency Authority, the chief officers of the fire & police service and the factory inspectorate and experts on health and safety. Provide advice on possible effects on areas outside the factory.
12. Ensure that HOD (HR & Admin.) liaise with out-side agencies such as Police, District Emergency Authorities, DM, ADM and Director of Factories. Provide advice on possible effects to the areas out-side the factory.
13. Ensure that search for casualties within the affected area has been carried out & arrange for hospitalization of victims and additional help if required like shelter, catering etc. If necessary arrange for evacuation and rescue of the neighboring population.
14. Arrange for maintaining of records of activities during control of emergency.
15. Control rehabilitation of affected areas and victims on cessation of the emergency
16. Do not restart the plant unless it is ensured safe to start and cleared by authorities

ECC Team Comprises of –

Shift Manager/shift In-charge-Acids shall take initial charge as Emergency Controller, till he is relieved by - Head- Production or Head-Engineering. In case of any emergency at Acids or emergency at tank farm area during odd hours, Shift In-charge –Acids shall take the role of incident controller and Senior most Shift In-charge of DAP1/DAP2 will act as Emergency Controller.

Emergency controller shall wear a Red & White helmet for easy identification.

Immediately after taking charge as Emergency Controller, Shift Manger shall take following actions –

1. After getting information from Security Supervisor, make an assessment of the incident and activate emergency Plan if it is a Level-2 Emergency situation.
2. Emergency Controller shall ensure that all members of his team have been informed to gather at Emergency Control Centre. He will then proceed to Emergency Control Centre to take charge.
3. After first hand assessment of situation, give necessary instructions to Emergency Control Team.
4. Alert Sanjana Cryogenic personnel in case of ammonia emergency.
5. Check wind direction in case of ammonia leakage & Sulphur fire.
6. Alert all the assembly points about wind direction & prepare for evacuation after shutting the plants and taking a head count.
7. Keep in touch with the incident controller.
8. Meet outside Emergency services on arrival at site and guide them.
9. Incident controller keeps in touch with other member of Emergency Control Center Team and help to provide resources with his team members.
10. He will depute people to attend telephone, Keep in touch with incident controller, Communicate with Assembly Points, Meet outside emergency services, Ensure proper flow of traffic control by security.

ACTIONS BY HEAD-ELECTRICAL (ALTERNATE: SR. MANAGER-ELECTRICAL)

1. Immediately on hearing of the Emergency Siren, reach at Emergency Control Centre and wait for instruction of Head- (Maintenance)/CEC.
2. By hearing emergency siren (or on getting message), electrical engineers should get in touch with Head for consultation and instructions.
3. Mobilize more electrical staff including second line of defense for help if required for Emergency Work.
4. Remain in contact with Head- Maintenance.
5. Direct the concerned person for providing extra lighting / isolating of electrical supply as per requirements.
6. Ensure that telephone exchange is manned for smooth communication.
7. Ensure power supply to emergency area.

ACTIONS BY FACTORY MEDICAL OFFICER (ALTERNATE: PHARMACIST IN SHIFT)

1. Immediately on being intimated (or by hearing siren) about the Emergency, contact the Chief Emergency Controller.
2. Render necessary treatment at First-Aid Centre.

a) Arrange for Hospitalization and treatment in the outside Hospitals, if required.

b) Mobilize extra Medical Assistance from outside if necessary.

3. Make arrangement for treating public if affected with the help of Admin. Officer.
4. Ensure the availability of oxygen and emergency medicine in sufficient quantity in the hospital.
5. Report hospital immediately on hearing / getting information about emergency.

ACTIONS BY HEAD—F&S (ALTERNATE: AGM/DY. MANAGER-F&S)

- On getting to know about the emergency he shall quickly reach the site of emergency.
- He shall be the person to direct the Fire Fighting and other Emergency Control Operations while other Fire & Safety officers shall assist him.
- Keep in constant touch with Chief Emergency Controller & Incident Controller and offer his expert advice.
- Ensure that rescue is provided to affected persons, as needed on priority.
- Mobilize Personal Protective Equipment's and other Safety Appliances.
- Direct fire & safety crew members at the scene of Emergency & arrange replenishment of Equipment's / extinguishing media, man power etc.

ACTIONS BY EXTERNAL COMMUNICATION

Head-HR, IR & Personal / Head-Commercial / DGM / Manager-HR shall be overall responsible for the emergency and related communications. He shall remain in constant contact with Chief Emergency Controller to assess the situation after getting details from the Chief Emergency Controller, and take following actions –

1. He will report immediately to Chief Emergency Controller
2. Prepare record of affected personnel with local and permanent address.
3. Inform Director of Factories about the incident.
4. Remain in contact with CEC
5. Get in touch with the Administration, competent person, Police, MD-Office, CHRO, Corporate communication to communicate the details of emergency.
6. The team shall indicate to all, should there be a likelihood of an offsite Emergency emanating from the onsite Emergency.
7. All information to stockholders will be provided by Chief emergency controller (Site Head) or Head-HR, IR & personal.

8. The responsibility of site head & head-HR, IR & Personal to make draft report for communication to media & community.
9. Name of causalities to be passed in writing by **Mr. Saurabh Bhattacharya** via SMS, email WhatsApp to next of kin.
10. All massage & communication released to outside factory will be approved by Site head or Head-HR, IR & Personal.

Haldia
SDO Haldia
Police
HDA (Haldia Development Authority)
Fire Brigade
State General Hospital
WBPCB (West Bengal Pollution Control Board)
Factory Inspector
SDPO
Local Media
General Manager (IOC, HPL, MCPI)
Deputy Chairman (HDC – Haldia Dock Complex)
Local MLA
Public and Employees
Tamluk
District Magistrate
Corporate Office, Kolkata
Managing Director

Group – 2 INCIDENT CONTROL TEAM

Incident Control Team has been identified to handle emergency from site. The team is headed by designated "Incident Controller" which works at emergency site under the guidance of Head- Fire & Safety until it takes over by any other Sr. Manager as Incident controller if the severity of situation is high. The team will be responsible for all the activities at the site of accident. It will be assisted by Process operators/fitters/security guards as per requirement.

RESPONSIBILITIES OF INCIDENT CONTROL TEAM

1. Direct all efforts to contain and the control incident.
2. Keep non-essential persons away from the site
3. Guide outside emergency services at the site

For Ammonia Emergency

1. Incident Controller – Shift In-charge Sanjana Cryogenic (For Sanjana site) / Shift In-charge-DAP-1 & 2 (for IIPL site)
2. Plant Head-DAP (Alternate Incident Controller)
3. Shift In-charge-DAP Engineering
4. Head- Security / Security Supervisor
5. Head- F&S

For Fire in Sulphur Yard / Leak in Sulphuric Acid Storage Tank

1. Incident Controller –Shift In-charge-SAP(Alternate-Plant Head-Acids)
2. Shift In-charge-Acids Engineering
3. Head- Security / Security Supervisor
4. Head- F&S

For Fire in Tank Farm

1. Incident Controller- Sr. Manager Stores (Alternate-HOD-Stores)
2. Incident Controller (Odd hours) – Shift In-charge-SAP
3. Shift In-Charge- Acids Engineering
4. Head- Security / Security Supervisor
5. Head- F&S

For Major Fire in Other Area

1. Incident Controller – Shift In-Charge- Plant(Alternate-Plant Head)
2. Shift In-Charge – Plant Engineering
3. Head- Security / Security Supervisor
4. Head- F&S

For Emergency due to Loss, theft, fire, explosion & Failure of shutter or damage to the Nucleonic Gauges

1. Incident Controller – Head-Instrumentation(Alternate-Shift In-charge – Instrumentation)
2. Shift In-Charge – DAP1/2
3. Head- Security / Security Supervisor
4. Head- F&S

4. Arrange to remove any casualties at the site
5. Keep in touch with Emergency Controller

ACTIONS BY INCIDENT CONTROLLER

Designated Assistant Manager / Manager shall act as the Incident controller till he is relieved by another Sr. Manager (if required). Respective Plant Manager (HOD) will take the charge from incident controller if he is present at site. Incident Controller shall report to the location of emergency and shall use his specialized knowledge to control the incident. Following managers are designated as Incident Controllers, till they are relieved by a designated manager.

In case of emergency in respective area, identified Incident Controller shall take the following actions –

Ammonia related emergency	**:** DAP-1 Shift In-Charge for emergency related to Ammonia (Alternate: Plant Head-DAP) and Shift In-Charge of Sanjana Cryogenic for Emergency arising out of Sanjana's tank & piping
Sulphur fire / Sulphuric acid leak	**:** Shift In-Charge-Acid (Alternate: Plant Head-Acids)
Fire in tank farm	**:** Shift In-Charge-Acid (Alternate: Plant Head-Acids)
Any other fire	**:** Shift In-charge-Plant (Alternate: Plant Head- Plant)

1. Rush to the site of incident and take necessary steps to control the incident. Incident controller shall remain at the site of incident till the incident is brought under control.
2. Keep the Emergency Controller informed regarding status of the incident and take actions as per his advice.
3. Control all actions at site of incident, including shutting down of affected plant.
4. Guide Firefighting personnel.
5. Evacuate the affected plant, if necessary.
6. If anybody is affected by the incident, ask security supervisor to move him to the hospital.

ACTIONS BY HEAD-FIRE & SAFETY (ALTERNATE: SHIFT IN CHARGE- FIRE & SAFETY)

Head- F&S will be at the location of the Incident and will guide the Incident Control Team which is headed by Incident Controller. He will be responsible for all the activities at the site of accident.

ACTIONS BY ESSENTIAL PERSONNEL

During Emergency operators, filters, technicians have to participate in handling the emergency.

1. In case of ammonia emergency DAP Process operators, the Ammonia plant operator and fitters should work under the guidance of Incident Controller.
2. In case of Sulphur fire SAP operators should work under the guidance of Incident Controller.

3. In case of a Fire in Tank Farm store personnel should work under the guidance of Incident Controller. Similarly in odd hours the acid operators should work under the guidance of Incident controller.
4. In case of any other emergency situation, personnel in the concerned department should assist the Incident Controller to handle the emergency.
5. Panel Operators of each plant should keep a watch on plant operation during an emergency. They should take emergency shutdown of their plant when advised by their Plant Manager or Emergency Controller.

Group – 3 ASSEMBLY POINT TEAM

Assembly point team is a group of people which guides non-essential personnel at various Emergency Assembly Points. Typically Plant Manager of shift are the part of Assembly Point Team. Each assembly point will have two display boards marked with "FIRST AIDERS" and "FIRE FIGHTERS" to identify those critical personnel easily from the crowd. So the first aiders will stand in front of First Aider board and the fire fighters will stand in front of Fire fighter board.

ACTION BY PLANT ASSISTANT MANAGER OF THE SHIFT

On hearing emergency siren plant shift Assistant Manager shall take following actions –

1. Rush to respective assembly points.
2. Ring up gate lodge (Phone no. 607) and find out the cause of siren. If phone is not working send a running messenger to the gate.
3. Guide personnel who have assembled at the Assembly points.
4. Head count of personnel in their sections. If somebody from another section is present then inform that section on phone.
5. If a major emergency is declared by the Emergency Controller, then Plant Assistant Manager should be prepared to take following actions as per advice of Emergency Controller.
   - Safe stoppage of plant if advised by Emergency controller.
   - Evacuation of personnel if advised by Emergency controller. Officer concerned should advice personnel about safe route for escape.
   - Assist Emergency Controller in any other way as required by the Emergency controller.

ACTION BY FIRST AIDERS

1. Designated First Aiders shall report to respective Assembly points and may be called to the Medical Centre or the location of emergency by the Medical staff or the Emergency controller as needed. The trained first aiders can be identified by RED CROSS mark on the helmets/ or, display board at every assembly points to identify First Aider. First Aiders to stand separately in front of Display board marked with "FIRST AIDERS" at every Emergency Assembly points.

4.0 ACTIONS BY ALL OTHER IIPL PERSONNEL

1. Persons who have not been specified a duty in case of emergency should proceed to/contact the Emergency Assembly Point in their area.
2. Designated persons will carry out the actions detailed in Emergency Procedure, under the guidance of the Plant Assistant Manager, after that they will go to their emergency assembly point.
3. The assembly point leader at each point will hold a roll call.
4. Personnel not at their normal work place must go to the emergency assembly point of area they are visiting.
5. Personnel will remain at these points and await instructions from the Emergency controller.

5.0 ACTIONS BY CONTRACTORS EMPLOYEES

1. Contractor's employees have been instructed in the Emergency Procedures before commencing work on this site (Induction training and re-training)
2. They will report to the nearest emergency assembly point on this site. The Emergency Controller will ask any member of the emergency control team to guide them in case a major decision like evacuation from the factory is taken.

6.0 ACTIONS BY VISITORS

1. Infrequent visitors registered on each visit and given a visitors pass. Such visitors are allowed access at the Administration building only. They should proceed to the assembly point close to Administrative building or else they may be directed by Manager (to whom the visitor has planned to visit) to leave the site if safe.

EMERGENCY RESPONSE PROCEDURES FOR IDENTIFIED EMERGENCY SITUATIONS

1.0 MAJOR RELEASE OF AMMONIA

Ammonia is stored in a 10000 MT atmospheric storage of M/s. Sanjana Cryogenic. Ammonia spillage of even a few tonnes should be regarded as a major hazard. A major spillage of ammonia should be regarded as a disaster situation. Information on toxic limits of ammonia in air is given in 3.2.3. Practical experience on ammonia spillage has shown that, when released from pressure vessels, the gas in contact with air forms a thick white suffocating cloud which sticks close to the ground and does not disperse easily especially in humid atmosphere. By virtue of this property, ammonia gas does not readily penetrate into sealed buildings, so that any person who is prevented from leaving an office or similar structure by ammonia cloud, may remain there in reasonable safety for some time, simply by closing and sealing all windows and doors and switching off Air-conditioning systems. Further, it has been found that the

ammonia could be approached closely from up-wind without breathing equipment. This property should be noted by tackling the source of the leak.

ACTION PLAN

This plan outlines the Emergency Response procedures for the following situations

a. Leakage from Atmospheric storage tank of M/S. Sanjana Cryogenic (although this is not a part of Indorama India Pvt. Ltd.)
b. Leakage of ammonia from pipeline inside / outside granulation plant

Steps to be taken on identification of leak

a. Isolate the system by pressing master isolation button.
b. Actuate Emergency Siren.
c. Take action as per Emergency shutdown Procedure. Use personal protective equipment.
d. Phone 666 and give details of emergency of the security guard.
e. Phone 632/634 and give details of emergency to plant officer/panel operator.
f. Keep personal protective equipment ready for use.
g. Wait for Emergency Controller/Incident Controller.

In case of leak in ammonia transfer pipeline form HDC Jetty

a. If transfer is on, stop transfer - this can be done from the M/S. Sanjana. To enable prompt action communication link has to be readily available. A 2 station walkie talkie is provided for this. In addition an emergency car is also provided.
b. Isolate the line by closing valves at two ends.
c. Minor leaks will be handled by factory Personnel while the transfer is stopped and pipeline depressurized. For major leakages an alarm will be raised, the local police and the fire services will be summoned and a contingency plan set into motion.
d. Arrange for evacuation of people from the downwind direction, if they cannot be taken indoors. Simultaneously (a), (b), (c).
e. After the initial release of gas the temperature would have come down and there will be pipeline containing liquid ammonia or pools of liquid ammonia on the ground.
   From the pipeline and the pool slow vaporization will take place. Water fog nozzles should be set up downwind to absorb the ammonia since this will cause rapid and vigorous boiling and vaporization of the cold liquid.

2.0 MAJOR FIRE IN SULPHUR YARD AT FACTORY / DOCK SITE

1000 MT of sulphur is stored in the sulphur yard in the factory and 9000 MT sulphur is stored at the docksite storage. Sulphur can catch fire due to any source of ignition. A fire in the yard will emit toxic fumes of SO2 gas. This can affect personnel in the vicinity as well as people in the neighborhood. While fighting a fire in sulphur yard, one must stay upwind of the fire and use suitable respiratory aid if necessary. Water is the most suitable media to fight against sulphur fire.

ACTION PLAN

Fire in the Sulphur Yard at factory

a. Blow Level-1 emergency hooter from nearest MCP and then inform security on internal telephone 666.
b. Phone 639/647 and give details of emergency to plant officer/panel operator.
c. Check air direction and stray upwind. Evacuate people from downwind direction.
d. Connect fire hoses on the hydrant points located on the upwind direction. (use fire engine/portable fire pump to fight fire from welfare block end).
e. Spray water on the sulphur heap to put out the fire.
f. If fire is in one compartment only, prevent spread to the second compartment by spraying water on the second compartment.
g. If fire is big, call fire brigade for assistance.
h. Use canister mask or breathing sets if required. A wet nose mask or cloth covering nose will also be of help.

Fire at the Dock site storage yard

a. Security guard will inform the factory and West Bengal fire brigade and HDC fire brigade.
b. Start extinguishing fire from the fire hydrant system located at Docksite.
c. Shift Manager / security supervisor will send fire engine, portable fire pump and canister type mask.
d. Water hoses available at Dock site will be used to fight fire till the fire brigade arrives.

3.0 MAJOR FIRE IN TANK FARM LOCATED NEXT TO STORE

276 KL Furnace Oil, 100 KL of High Speed Diesel is stored in the Tank Farm area. A fire in this area can spread to any of the tank and become a major emergency. If burning liquid finds its way into the drains, the fire can spread to other parts of the factory. Details of action plan to fight a fire in the tank farm area are given below.

ACTION PLAN

a. Blow emergency siren and inform security on the internal telephone 666.
b. While fighting a fire it is advisable to stay upwind.
c. If fire is small use appropriate fire extinguisher. For fires in liquid hydrocarbons Foam type, ABC or CO2 fire extinguishers can be used.
d. If fire is big use foam ejector available in Central Workshop. Connect it to fire hydrant point depending on location of the fire. Call fire brigade immediately; clearly inform that it is a liquid hydrocarbon fire.

e. Ensure all outlets from the tank are closed, to prevent oil from entering the drains.
f. If fire is in one area, keep adjoining tanks cool by spraying water from fire hydrants.
g. Water should not be used to fight a liquid fire. At best it can be used as a fine spray from a fog nozzle.

4.0 MAJOR LEAK OF SULPHURIC ACID STORAGE TANKS

Sulphuric acid (98.4%) is stored in three nos. of MS storage tanks. Each tank has a storage capacity of 750 MT of acid. Sulphuric acid is highly corrosive acid. In case of a major leak from one of the tanks, acid will spill into containment dyke constructed around the tank. In case acid does come out of the dyke, it may go to the green belt canal through factory storm water drain. This will affect marine life in the canal.

ACTION PLAN

a. Blow Level-1 emergency hooter from nearest MCP and inform security on the internal telephone 666.
b. Avoid contact with acid. Put on proper personal protective equipment before handling the emergency.
c. Ensure that drain valve of dyke is closed.
d. If acid is being transferred to the tank, stop immediately.
e. Stop Sulphuric acid plant. However keep acid circulation on, so that space is available in the circulation tank.
f. Stop leak if possible i.e. in case leak is in the outlet pipeline close the outlet valve or plug valve operated from top of the tank.
g. Transfer acid from the leaky tank to the other tank / circulation tank / DAP day tank / road tankers. Use sump pump / acid export pump for this.
h. In case acid has spilled into storm water drain, neutralize with soda ash stored in the area, to prevent contamination of Storm water drain.
i. In case acid has spilled on ground nearby, contain by constructing a temporary mud / sand dyke and gradually neutralize with lime / soda ash and then flush the area with water.

Note: Do not spray water directly on a large spill as it will generate large amount of heat and acid will splash around. For small spills acid can be flushed with large amount of water taking care that water jet is directed on outside of spill and gradually moving inside.

5.0 ACCIDENTS WITH TANKERS CARRYING HAZARDOUS CHEMICALS

Tankers are used for transporting Phosphoric acid from factory to Docksite, transporting spent acid from factory to factory, sulfuric acid from factory to 3P, Caustic and other chemicals from suppliers to our factory. Depending on the type of hazardous chemicals, the action plan will change as mentioned below.

The frequencies of tanker operation in the factory are given below –

- Phosphoric acid – Average 70 tankers / day
- Sulfuric acid - Average 20-25 tankers / day
- Caustic - Average 1 tanker / day
- Spent acid - Average 6 tankers / day
- Molten Sulphur- Average 5-8 tankers / day

ACTION PLAN

Material Safety Data Sheet of the materials handled in tankers namely Phosphoric acid, Sulfuric acid, caustic, Spent Acid are given in annexure XX .

a) First of all the area where the accident has happened needs to be cordoned off.
b) The injured persons need to be rushed to nearest medical center. Based on the advice of the Doctors, the treatment of the injured needs to be carried out.
c) At site, it has to be seen that the spilled chemicals do not spread to a larger area or water body.
d) Based on the MSDS recommendations, the chemicals needs to be recovered, if possible with proper PPE. Then the balance spilled materials needs to be neutralized.
e) Utmost care to be taken to ensure that the materials do not spread to a larger area, which can affect the human, plant & animal life.
f) Adequate precautions to be taken for flammable & toxic materials in line with the recommendations of MSDS.
g) Communication to be done with external private & governmental agencies in line with statutory guidelines or for external help.

ACCIDENTS WITH TANKERS CARRYING MOLTEN SULPHUR

Steam jacketed tankers are used for transporting molten Sulphur from Indian Oil Corporation Ltd, Haldia to factory. Depending on the type of hazards involved, the action required to combat the road emergency scenario are as mentioned below.

The frequencies of tanker operation in the factory are given below –

- Molten Sulphur – Average 5-8 tankers / day

ACTION PLAN

Material Safety Data Sheet of molten Sulphur is given in annexure XX .

h) First of all the area where the accident has happened needs to be cordoned off.
i) The injured persons need to be rushed to nearest medical center. Based on the advice of the Doctors, the treatment of the injured needs to be carried out.
j) At site, it has to be seen that the spilled chemicals do not spread to a larger area or water body.
k) The molten Sulphur becomes solidified immediately if water is sprayed on it. So it is recommended to spray water on the spilled over materials from nearby water sources.
l) Inform factory emergency no. 666 for fire tender as soon as possible.

m) Utmost care to be taken to ensure that the materials do not spread to a larger area, which can affect the human, plant & animal life.

n) Prevent ignition source or naked flame exposed to the spilled sulphur (liq or solid) to avoid fire. In case of fire Sulphur di-oxide gas will evolve and create gaseous atmosphere surrounding and may cause eye and throat irritation to the people.

o) Communication to be done with external private & governmental agencies in line with statutory guidelines or for external help.

Based on the MSDS recommendations, the molten Sulphur needs to be recovered, if possible with proper PPE.

6.0 EMERGENCY DUE TO LOSS, THEFT, FIRE, EXPLOSION & FAILURE OF SHUTTER OR DAMAGE TO THE NUCLEONIC GAUGES

1. There are two nucleonic gauges installed at DAP1 & DAP 2 reactor tank. The nucleonic gauges are protected by SS/MS body with lead plate in side to absorb the rays & protect the gauge from three sides. An emergency may occur due to Loss, theft, fire, explosion & Failure of shutter or damage to the nucleonic device by accidents / operation / servicing / maintenance after installation.

ACTION PLAN

a) Blow Level-1 emergency hooter from nearest MCP and inform security on the internal telephone 666.
b) Avoid people movement to effected area & try to barricade the access point to restrict movement.
c) Inform RSO(Radiological Safety Officer) or his alternate.
d) In case of theft or loss, inform the security department
e) In case of fire or explosion contact the fire department for help.
f) Arrange for temporary shielding in front of the shutter of the gauge immediately.
g) Inform the supplier of the device about the observed condition of the device
h) In case of damage to the device, measure the radiation level around the device and record the observations. If the measured levels are in excess of the prescribed limits, report the matter to Chairman, ERC and to AERB, Niyamak Bhavan, Anushaktinagar, Mumbai 400 094
i) Inform the police in the event of suspected theft.
j) Rescue the injured, if any
k) Fight fire, if there is a fire accident
l) Segregate the nucleonic device under the supervision of the RSO
m) Verify the information provided regarding the off-normal situation before declaring emergency

EMERGENCY FIRE ALARM

1.0 EMERGENCY FIRE ALARM ZONE AND MANUAL CALL POINTS

Zone No. – 1	Location of Manual Call Point
DAP 1	DAP 1 ground Floor
Zone No. – 2	**Location of Manual Call Point**
DAP 1	DAP 1 First Floor
Zone No. – 3	**Location of Manual Call Point**
DAP 1	DAP 1 Control Room
Zone No. – 4	**Location of Manual Call Point**
DAP 2	DAP 2 Ground Floor
Zone No. – 5	**Location of Manual Call Point**
DAP 2	DAP 2 First Floor
Zone No. – 6	**Location of Manual Call Point**
DAP 2	DAP 2 Control Room
Zone No. – 7	**Location of Manual Call Point**
DAP 1	DAP 1 Back site Hag(Near ETP)
Zone No. – 8	**Location of Manual Call Point**
FCC Building	FCC First Floor Laboratory
Zone No. – 9	**Location of Manual Call Point**
DAP Bagging	DAP Bagging Ground Floor(Near P K Das Supervisor Office)
DAP Bagging	DAP Bagging First Floor
Zone No. – 10	**Location of Manual Call Point**
SSP	SSP Control Room
SSP	SSP Ground Floor
SSP	SSP Bagging
Zone No. – 11	**Location of Manual Call Point**
New Ware House	New Ware House Loading Point = 01
New Ware House	New Ware House Loading Point = 02
New Ware House	New Ware House Loading Point = 03
Zone No. – 12	**Location of Manual Call Point**
Compressor House	**Compressor House**

Zone No. – 13	Location of Manual Call Point
SAP 1	SAP 1 Control Room
Zone No. – 14	**Location of Manual Call Point**
SAP 2	SAP 2 Control Room
Zone No. – 15	**Location of Manual Call Point**
SAP 2 TG	SAP 2 TG Control Room
Zone No. – 16	**Location of Manual Call Point**
PAP	PAP Control Room
Zone No. – 17	**Location of Manual Call Point**
Central Lab	Central Lab First Floor
Zone No. – 18	**Location of Manual Call Point**
Tank Farm Area	Tank Farm Area Near Electrical Department
Zone No. – 19	**Location of Manual Call Point**
Work Shop	Central Work shop
Zone No. – 20	**Location of Manual Call Point**
Ammonia Control Room	**Ammonia Control Room**
Zone No. – 21	**Location of Manual Call Point**
New Weight Bridge	**New Weight Bridge(Logistic Department)**
Zone No. – 22	**Location of Manual Call Point**
ADM	ADM Ground Floor
Zone No. – 23	**Location of Manual Call Point**
CPP	CPP Ground Floor
CPP	CPP Control Room

Zone No. – 24	Location of Manual Call Point
Main Gate	Repetition From Smoke Panel

2.0 EMERGENCY SMOKE FIRE ALARM ZONE

ZONE –1

1. System Computer Room
2. System Servicing Room

ZONE – 2

1. Accounts Department

ZONE – 3

1. Engineering Store

ZONE – 4

1. HR Department

ZONE – 5

1. Zeolite Office Building 1st Floor

ZONE – 6

1. Zeolite both Training hall 1st Floor

- ***Location Wise Smoke detector Installation List***

Sr. no.	Plant/Location	No. of SD	ISD	OSD	HD
01	SAP-1	10	7	03	-
	Zone-1 New mcc room	02	1	1	
	Zone-2DM plant mcc room	02	1	1	
	Zone-2 DM plant control room	01	1		
	Zone-2 RO plant	01	1		
	Zone -2 Package boiler	02	1	1	
	Zone-3 SAP-1 control room (Instrument cabin back side)	01	2		
02	SAP-2	23	20	-	03
	Zone-1 TG control room		04		
	Zone-2 SAP-2 Mcc room 1st floor		10		
	Zone-3 SAP-1 New mcc room		04		
	Zone-3 SAP-2 Control room		02		
03	PAP	40	37		03
	Zone-1 Control room		02		
	Zone-2 MCC room		10		
	Zone-3 Instrument DCS room		03		
	Zone-4 VFD room		05		
	Zone-5 PCC & New cc room 1st floor		12		
	Zone-5 Transformer area		03		03
	ZONE-6 Sulphur Grinding Shed		2		
04	DAP-1	36	30	02	04
	Zone-1 Control room		03		
	Zone-2 Transformer room (North side)		04	02	04
	Zone-3 MCC room (West Side)		08		
	Zoine-4 MCC room (Middle Side)		11		
	Zone-5 MCC room (East Side)		02		
	Zone-6 PMCC & Ammonia VFD		02		
05	DAP-2	36	32	-	04
	Zone-1 Control room		04		
	Zone-2 MCC room 1st floor		22		
	Zone-3 MCC room 1st floor		01		
	Zone-4 Booth transformer room				04
	Zone-5 VFD & NPK MCC room G/f		01		
	Zone-6 Substation (New)		04		

06	DAP Bagging Plant	11	11		
	Zone-1 Control room 1st floor		02		
	Zone-1 -2nd floor MCC room		05		
	Zone-2 New ware house MCC room		04		
07	SSP Plant	18	14		4
	Zone-1 SSP Control room		02		
	Zolne-2 MCC & VFD room		12		
	Zone-3 Both transformer room				04
08	CPP	14	14		
	Zone-1 MCC room		07		
	Zone-2 Front side Mcc room		07		
09	HR Dept.	15	00	15	
10	ADM building	56		56	
11	Engineering store	40		40	
12	33KV Substation	16	16		
	Zone-1 33 KV MCC room		08		
	Zone-2 33 KV MCC room		08		
13	Compressor house	05	0	05	
	Zone-1 Compressor –C			01	
	Zone-1 Compressor –D			01	
	Zone-1 compressor –E			02	
	Zone-2 MCC room			02	
14	Sulphonation	08	08		
	Zone-1 MCC panel room 1st floor		08		
15	Ammonia control room	07	03	04	
	Zone-1 MCC room		02	02	
	Zone-2 e4ast side MCC			02	
	Zone-3 Control room		01		
16	Zeolite Building	35	08	27	
	Zone-5 Work station		08	07	
	Zone-6 New Training Centre 1&2			20	
17	Empty Bag Godown	08		08	
18	Employee canteen	07		07	

SUMMARY	
Smoke Detector Category	Qty
Ionization Smoke detector (ISD)-	331
Optical Smoke Detector (OSD)-	126
Heat Detector (HD)-	18
Total=475	

Fire Alarm Control Panel Board

Capacity	Qty
30-Zone Control Panel	02
06-Zone control Panel	11
04-Zone Control Panel	04
10-Zone Control Panel	01
Total=18-Nos	

ASSEMBLY POINTS

1.0 ASSEMBLY POINTS LOCATIONS AND CONTACT NUMBERS

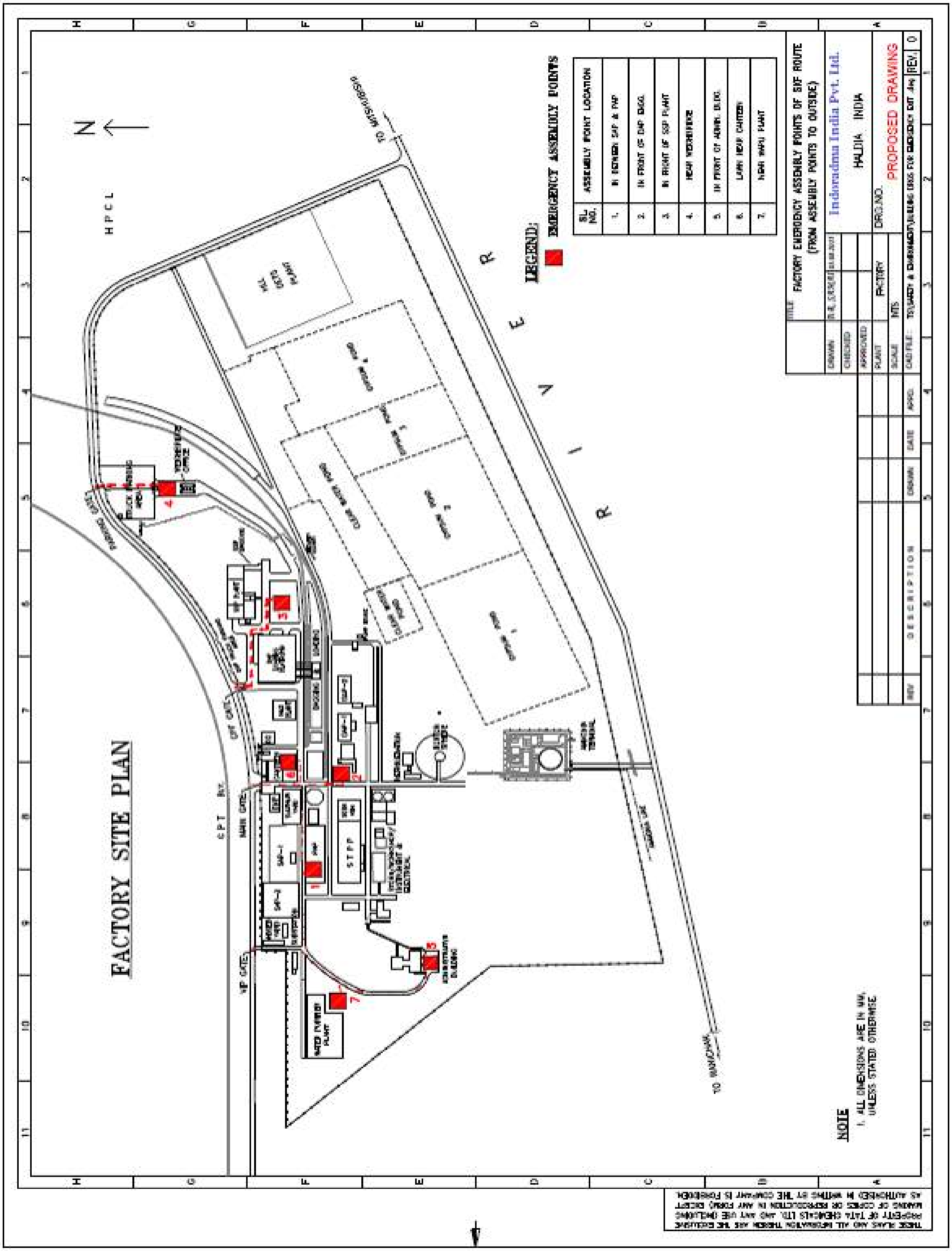
SL	Assembly Point	Area Covered	Intercom
1	Near 3rd Parking Gate	Weighbridge, Parking	613/ 608
2	In front of SSP Engineering	SSP, SSP Bagging & DAP Bagging Area, Old and New Warehouse	672/641
3	In front of DAP Engineering	DAP-1 & 2, Engineering (Acids & DAP), CST, Stores, RM Stores, Central workshop, Electrical, Instrument, CBMS, Central Laboratory	634/630/648
4	Wapu Plant Lawn	Wapu Plant, DG	739/746
5	Car Parking Area	Admin Building	758/671/661
**6	PAP yard	SAP-1 & 2,STG	639/630
7	Lawn Welfare Block (During General Shift only)	HR, Canteen, New office, Compressor	700/618

**Due to STG project work assembly point 6 (PAP yard) has been temporarily closed. So during any emergency for this period SAP 1&2 people will assemble at assembly point 7 & STG people will assemble at assembly point 5.

2.0 ROLL CALLER TEAM RESPONSIBILITY

ROLL CALL LEADERS are the persons who carry out Roll Calls at the Emergency Assembly Points.

1. To assemble at assembly point were designated for roll call.
2. To make assemble employee & contractor at assembly points.
3. The head count is to be carried out at assembly point.
4. To gather information from emergency control center.
5. To be in constant touch with emergency control center.
6. To find out first aider & fire fighter at assembly point & make them stand near designated board.
7. To inform ECC team about the number of employee & contract employee assembled at assembly point.


FACTORY SITE PLAN
H P C L
R I V E R
LEGEND:
EMERGENCY ASSEMBLY POINTS
SL NO.
ASSEMBLY POINT LOCATION
1. IN BETWEEN SAP & PAP
2. IN FRONT OF DAP BAGG.
3. IN FRONT OF SSP PLANT
4. NEAR WEIGHBRIDGE
5. IN FRONT OF ADMN. BLDG.
6. LAWN NEAR CANTEEN
7. NEAR WAPU PLANT
FACTORY EMERGENCY ASSEMBLY POINTS OF EXF ROUTE (FROM ASSEMBLY POINTS TO OUTSIDE)
Indorama India Pvt. Ltd.
HALDIA INDIA
PROPOSED DRAWING
NOTE
1. ALL DIMENSIONS ARE IN MM, UNLESS STATED OTHERWISE.

EMERGENCY CONTACT NUMBER

1.0 CONTACT NUMBERS OF EMERGENCY CONTROL TEAM

Team	Designation	Int.	Ext. (Off.)	Ext. (Res)	Mobile
Chief Emergency Controller	Head-Plant Operations	660	251000	262005	9733663100
Emergency Controller	Emergency Controller				9564589010
Emergency Controller (Alternate)	Shift In charge-Acid	639			9564070100
	Shift In charge-DAP	632/ 634		--	
	Shift In charge-SSP	672		--	
Control Centre	Head – Production	658	--	262010	9564288100
	Head- Engineering	678	--	251001	9593516100
	Head-Electrical	723	251016	262023	9564062100
	Head- Instrumentation	635			9593465100
	Factory Medical Off.	662	251009	262020	9593115100
	Shift In charge-Fire & Safety	765 683		--	8630431810 9564438100
Control Centre (Alternate)	Shift In-charge-Electrical	654	251013	262017	9564062100
	Pharmacist	662	251009	--	
External Communication	Manager- HR	700			9593060100
	Head-HR. IR, Personnel	653	--	278001	9564107100
	Head-Accounts	702	251010	262029	9593517100
Incident Controller	Shit In Charge – DAP	632	251011	--	--
	Shift it In charge - Acids	639	251012	--	--
Incident Controller	Manager –Stores	627			9564055100
Incident Controller (Alternate)	Plant Head-DAP	626	251020	262013	9564139100
	Plant Head – Acids	639	251015	--	9564277100
	Plant Head – SSP	672			9564138100
	HOD-Stores	722			9593461100
Incident Control Team	Shift In charge – Fertilizer Engg.	648	--	--	
	Shift In charge – Acids Engineering	630	--	--	
	Head – Fire & Safety	682			9564241100
Others	Head- Acids Engineering	601			9564191100
	Head-Purchase	693	251004	--	9563532100
	Head-Instrumentation	606	251012		9593465100
Corporate Communication			(033) 66343100		
Sanjana Control Room		686	253744 253761		9332311334

EMERGENCY CONTROL ROOM : 666/ 664 / 663 / 657

STD CODE –HALDIA : 03224

2.0 CONTACT NUMBERS FOR EXTERNAL COMMUNICATIONS

	Contact No.	
FIRE BRIGADE (HALDIA)		
WEST BENGAL FIRE BRIGADE	252500	101
HPCL FIRE BRIGADE	222647/ 278113	
IOC FIRE BRIGADE	251108	
MCPI FIRE BRIGADE	277472/273651	
HDC FIRE BRIGADE	252480/252433	
HPL FIRE BRIGADE	222675	
POLICE STATION (HALDIA)		
HALDIA POLICE STATION	251112	100
DURGACHAK POLICE STATION	251111	--
HOSPITAL (HALDIA)		
STATE GENERAL HOSPITAL	274108 /278112	--
DR. B. C. ROY HOSPITAL	269048	--
HDC HOSPITAL	263265/263388	--
AMBULANCE (HALDIA)		
HALDIA MUNICIPALTY	275289	102
GOVERNMENT AUTHORITIES (HALDIA)		
FACTORY INSPECTOR	274105	--
WBPCB, HALDIA	274190 /276847	
S.D.O.	274015/263131	
HDA, CEO	274154/274164	
TAMLUK (STD CODE 03228)		
DISTRICT MAGISTATE	266098	--
POLICE SUPERIDENT	269850	-
STATE GENERAL HOSPITAL	266059	--
KOLKATA (STD CODE 033)		
CHIEF INSPETORATE OF FACTORIES	22103274	--
WBPCB (MEMBER SECRETARY)	23356213/23356730	

3.0 TELEPHONE HOT NETWORK

Sr. No.	Name	Phone No.
1	Additional District Magistrate, Haldia Central Control Room (OFFICE)	278100
2	Additional District Magistrate, Haldia (R)	262100
3	Additional S.P. Haldia	278116
4	Sub-Divisional Officer. Haldia	278110
5	Sub-Divisional Police Officer, Haldia	278109
6	Haldia. P.S. (Alternate Control Room)	251112
7	Durgachak P.S	251111
8	Bhawbanipur P.S	251113
9	Sub-Divisional Hospital . Haldia	278112
10	I.O.C Hospital. Haldia Township	262101
11	K.P.T. Hospital Haldia Township	262102
12	Haldia Development Authority	278111
14	B.P.C.L.	251103
16	Exide Industries Ltd.	251102
17	Electo Steel Castings Ltd.	278107
18	Haldia Petro Chemicals Ltd.	278113
19	Hindusthan Uni-Lever Ltd.	251105
21	H.P.C.L	251104
22	I.O.C.L. Haldia Refinery	251108
23	I.O.C.L. Haldia Baruani Crude Oil Pipeline	278103
24	Indian Oil Petronas Pvt. Ltd.	278104
26	Marcus Oil & Chemicals Pvt Ltd	278106
27	MCPI Private Ltd.	275572/73
29	Praxair India Pvt Ltd.	278101
31	R.D.B.Rasayans Ltd.	278108
32	IVL Dhunseri Petrochem Ltd.	278114
33	United Phosphorus Ltd.	251109
34	Sanjana Cryogenic Storage Ltd.	251110

ANNEXURE-1

CONTINGENCY PLAN FOR HANDLING NATURAL CALAMITIES

INTRODUCTION

Natural Calamities are the occurrence that causes damage, economic disruption, loss of life and deterioration of health and health services on sufficient scale to warrant an extraordinary response from outside the affected community or area or it is a crises situation which cannot be dealt by the affected community with its own resources. Classification of Natural Calamities – Natural Calamities can be classified into three types

- Cyclone
- Earthquake
- Floods.

SCALE OF EMERGENCY

Stage: I

Public authority intimates automatically as soon as the emergency is declared. The objective of this stage is smooth flow of traffic on the evacuation routes to ensure that these routes are kept cleared.

Stage: II

This stage shall be implemented when the emergency requires evacuation or when spontaneous evacuation begins to occur. In this stage traffic shall not be permitted to enter the primary zones and it shall be suitably diverted.

Stage: III

This stage shall be implemented when sectors and zones are specified for liable evacuation and Trucks; Buses, Ambulance etc. shall be deployed to enter the specific areas for evacuation of designated temporary shelters.

TYPE OF EMERGENCY

Level-1

The healthy people would not suffer any long lasting effect except discomfort and property loss.

Level-2

Significant part of those exposed would be seriously injured or killed.

SCOPE OF CONTINGENCY PLAN

In case of major natural calamities, the population and environment of and around the factory premises are likely to be effected. To great extent various public authorities required to act quickly and take action as marked in Contingency Plan.

OBJECTIVE

1. To minimise the damage / loss of properties & environment and to safe guard the people.
2. If necessary, to rescue / evacuate and shift them to safe place (including injured persons)
3. To provide the information both about the incident and the action taken by authorities.

This plan covers various activities to be taken by the different public authorities in case of a major emergency arising out of the natural calamities taking place in Haldia and surrounding. The Plant Head will be in-charge of all activities for handling the emergency in inception stage; later on SDO- Haldia District Collector, East Medinipur will take the charge of incident.

ACTIVATION OF DISASTER CONTROL PLAN

As a general guidance for the public authorities after notification of emergency, the initial implementation of this contingency plan is carried out accordingly to the category assigned as per plan.

IMPLEMENTATION OF PROTECTIVE MEASURES

The guidelines laid down in the plan are to be observed for implementation of protective measures during early phase of emergency.

1. **TRAFFIC CONTROL**

   A traffic control plan will be made and implemented for Entry & Exist roads.

2. **COMMUNICATION OF INFORMATION**

   - To communicate public likely to be affected through appropriate media including advice and guidance for action to ensure safety and wellbeing of public.
   - To provide accurate information to general public on the state of emergency and measures being taken to deal with the same.
   - To monitor and assess the sectors of emergency operations and provide feedback for decision making.

TRANSITION PHASE

Transition from early phase to intermediate phase: Once it is established on technical grounds that early phase of emergency is over. Off-site controller should be continue the responsibility for co-ordinating the post emergency action for restoration and implementation of medical services called for

RETURN OF EVACUEES

The evacuees shall only be allowed to return on affected area after technically ascertaining that the area is safe for their return. The return of evacuees would be received and regulated as per the guidance.

OPERATIONAL CONVENTIONS

Time: The local time shall be standard time unless and otherwise specified as expressed for a 24 hrs. Clock starting with 00:00 hrs. at mid night. Location shall be expressed with reference to side area map within the radius of the plant with details of Haldia Industrial Planning zone.

Wind Directions: This is always expressed as direction from which the wind is coming and is expressed in degrees with respect to north in clockwise direction.

RESPONSIBILITIES OF VARIOUS AGENCIES

CONTINGENCY PLAN SITE CONTROLLER

The District Magistrate- East Medinipur and SDO is designated as contingency plan site controller for handling the natural calamities. He is responsible for review, co-ordination. He will also ensure co-ordination between various departments and other organisation involving for helping to each other nearby industries. Various responsibilities are given for different department.

KEY PERSONNEL

A separate list of addresses and telephone numbers of the key personnel as well as others connected with the off-site emergency plan are maintained by the off-site main controller, Indorama India Pvt. Ltd., Haldia. The list shall be updated, maintained as and when required.

INFORMATION GROUP

This group provides inputs regarding public and media perspective and reactions. This group is also responsible for issuing information. Bulletins as authorised by disaster control committee.

STATE INFORMATION CENTRE

The information is to be provided by centre to media. This centre will deal with –

- Media
- Enquiries from public
- Enquiries from official sources

This centre would release bulletins based on the material approved by the Government.

MEDIA

The media may be significantly useful to inform the general public through press release / special bulletins which can be published by the newspaper, Broad Casts on Radio or relayed over Television network. To give authentic information on the developing situation regarding emergency however due course is necessary to counter the spread rumours leading to panic in public.

ACTION TO BE TAKEN IN THE EVENT OF AN EMERGENCY

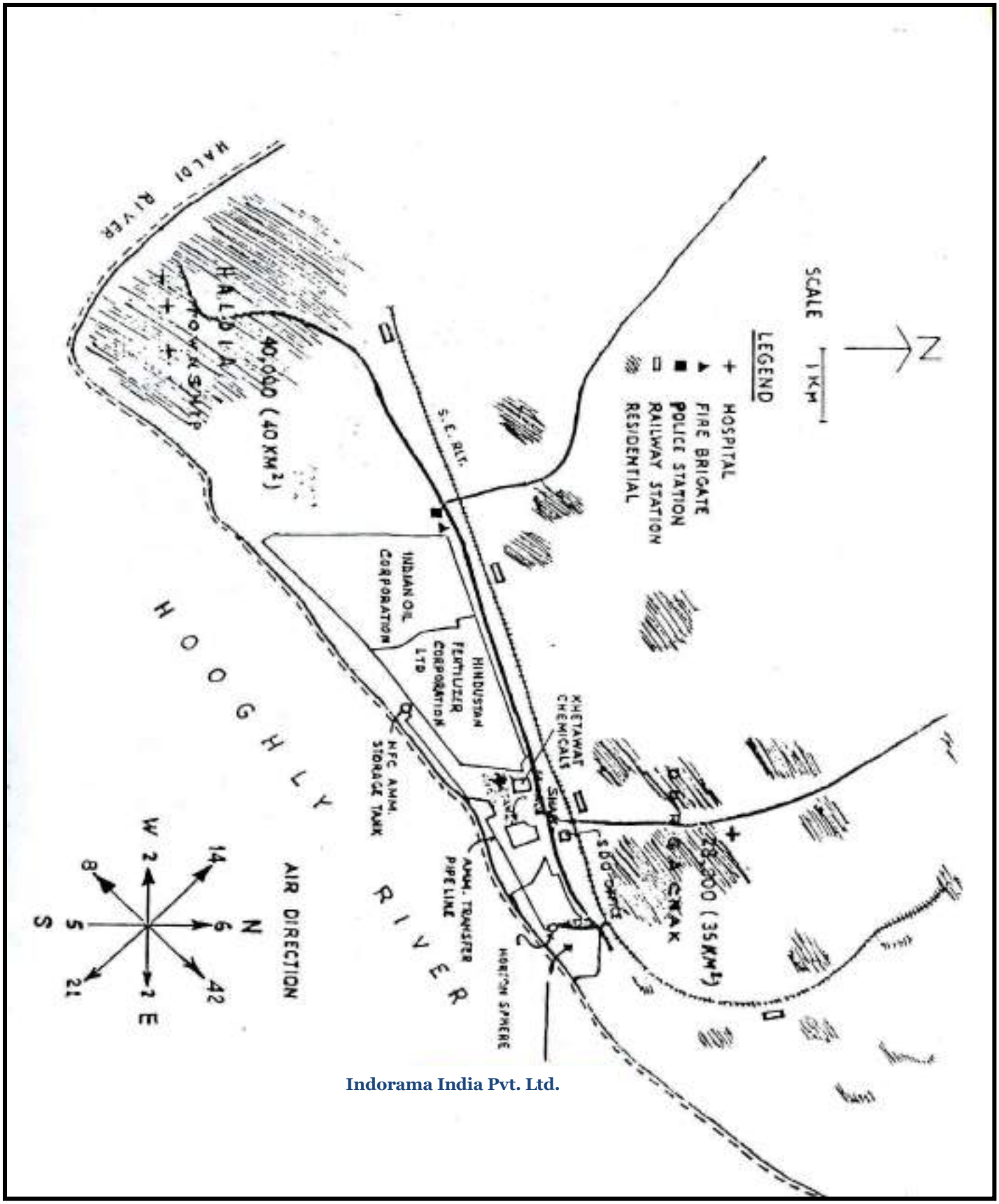
The proposed response to any incident must be appropriate to that particular situation and the news of the emergency services will be paramount. The advice in the following paragraphs should be regarded as general and is provided mainly to indicate the extent of emergency planning that may be necessary. Several different planned responses may be necessary at any one site, depending on the nature of the various incidents foreseen. In many cases involving toxic or flammable hazards evacuation may not be the appropriate action to take. This is because in certain instances such a response might expose people to a greater risk than if they had stayed indoors.

REHEARSALS, PRACTICES AND REVISION OF PLANS

- It is essential that all aspects of the emergency plans are tested and revised regularly. Local authority may wish to be present at major exercises, if resources permit, but firms should not necessarily expect a representative to attend.
- District Authority will be involved in consultation on emergency plans, in particular with local authorities responsible for drawing up off-site emergency plans.
- It is the responsibility of District Authority to monitor the adequacy of both on site & off-site plans. District Authority should ensure that, where plans are required, they are realistic well documented and rehearsed and updated regularly.

REVISION

At regular intervals following a major change in telephone numbers and personnel, the emergency plan should be reassessed and altered or updated as necessary. All personnel involved should be made aware of the revision and appropriately revised instructions plans made available



Indorama India Pvt. Ltd.

Do's and Don'ts (Earthquake)

- Learn about an earthquake's causes and effects. Speak about them in a calm and composed manner, not spreading anxiety about the phenomenon.
- Keep a torch and a portable transistor radio handy.
- Keep the corridors in the house clear of furniture, making movement easier.
- Attach shelves, gas cylinders, vases and flowerpots to the walls of your home.
- Place heavy or bulky objects on the floor or on the lowest shelves.
- Teach all members of your family how to turn off the electricity, water and gas supply.

During an earthquake

- Keep calm and help others to do that.

If you are at home or inside a building

- Do not rush to the doors or exits; never use the lifts; keep well away from windows, mirrors, chimneys and furniture.
- Protect yourself by staying under the lintel of an inner door, in the corner of a room, under a table or even under a bed.

If you are in the street

- Walk towards an open place in a calm and composed manner. Do not run and do not wander round the streets.
- Keep away from buildings, especially old, tall or detached buildings, electricity wires, slopes and walls, which are liable to collapse.

If you are driving

- Stop the vehicle away from buildings, walls, slopes, electricity wires and cables, and stay in the vehicle.

After an earthquake

- Keep calm, switch on the radio/TV and obey any instructions you hear on it.
- Keep away from beaches and low banks of rivers. Huge waves may sweep in.
- Expect aftershocks. Be prepared.
- Turn off the water, gas and electricity.
- Do not smoke and do not light matches or use a cigarette lighter. Do not turn on switches. There may be gas leaks or short-circuits.
- Use a torch.
- If there is a fire, try to put it out. If you cannot, call the fire brigade.
- If people are seriously injured, do not move them unless they are in danger.
- Immediately clean up any inflammable products that may have spilled (alcohol, paint, etc).
- If you know that people have been buried, tell the rescue teams. Do not rush and do not worsen the situation of injured persons or your own situation.
- Avoid places where there are loose electric wires and do not touch any metal object in contact with them.
- Do not drink water from open containers without having examined it and filtered it through a sieve, a filter or an ordinary clean cloth.

- Eat something. You will feel better and more capable of helping others.
- If your home is badly damaged, you will have to leave it. Collect water containers, food, and ordinary and special medicines (for persons with heart complaints, diabetes, etc.)
- Do not re-enter badly damaged buildings and do not go near damaged structures.
- Do not walk around the streets to see what has happened. Keep clear of the streets to enable rescue vehicles to pass.

DO'S AND DON'TS (CYCLONE)

Listen to the radio for advance information and advice. Allow considerable margin for safety. A cyclone may change direction, speed or intensity within a few hours, so stay tuned to the radio for updated information.

If storm-force winds or severe gales are forecast for your area, then

- Store or secure loose boards, corrugated iron, rubbish tins or anything else that could become dangerous.
- Tape up large windows to prevent them from shattering.
- Move to the nearest shelter or vacate the area if this is ordered by the appropriate government agency.

When the storm hits

- Stay indoors and take shelter in the strongest part of your house.
- Listen to the radio and follow instructions.
- Open windows on the sheltered side of the house, if the roof begins to lift.
- Find shelter if you are caught out in the open.
- Do not go outside or into a beach during a lull in the storm.

Cyclones are often accompanied by large storm surges from the ocean and the precautions listed for floods should be taken if you live near the coast.

DO'S AND DON'TS (FLOOD)

- Listen to the radio for advance information and advice.
- Disconnect all electrical appliances and move all valuable personal and household goods and clothing out of reach of floodwater, if you are warned or if you suspect that floodwaters may reach the house.
- Move vehicles, farm animals and movable goods to the highest ground nearby.
- Prevent dangerous pollution - move all insecticides out of reach of the water.
- Turn off electricity, gas if you have to leave the house.
- Lock all outside doors and Windows & you have to leave the house.
- Do not enter floodwaters on foot if you can avoid it.
- Never wander around a flooded area.

ANNEXURE-2

FIRE FIGHTING AND OTHER FACILITIES

1.0 FIRE FIGHTING

WATER RESERVOIR

a. Capacity of Fire Water tank in liters : 567 KL

b. Sources of inflow : PHE, Deep Tube Well (2 No.)

c. Aggregate Inflow in liters per minute : 7000

i) Details of Public Water Supply in liters per minute : 5000

ii) Pumping capacity of each Deep Tube Well in liters per minute : 2000

PUMPS

Name of the pump/Type	Electrical pump no.-02 (Horizontal) Centrifugal	Electrical Pump no.-01 (Vertical) Centrifugal	Diesel pump Centrifugal	Jockey pump 1 Centrifugal	Jockey pump 2 Centrifugal	Portable pump N-01 Centrifugal	Portable pump N -2 Centrifugal
Capacity	172M³/hrs.	272M³/Hrs.	1000 Gallon PM	13M³/Hrs.	13M³/Hrs.	275 LPM	275 LPM
Discharge pressure	7Kg/Cm²	8.8 Kg/Cm²	8.8 Kg/Cm²	6 Kg/Cm²	7Kg/Cm²	4Kg/Cm²	4Kg/Cm²
Make by	Deacon	Kirloskar	Mother & Plate	Khimlime (Sulzar)	Khimlime (Sulzar)	Minimax Fire x	Minimax
Model	-	-	70, Size-4/5"	-	-	-	-
Switch System	Manually	Manually	Manually	Auto	Auto	Manually	Manually

HYDRANTS

Over ground M.S. Fire hydrant line (internal diameter rings mains - 6'') with interchangeable couplings maintained at 6 kg/cm² pressure.

No. of Single-headed hydrants – 96

No. of Double-headed hydrants - 3

Length of Fire Hydrant line networks – Around 3800 m

WATER MONITERS DETAILS

No. of water monitors – 1

1 No. outside of Sulphur yard wall (east side).

FOAM MONITERS DETAILS

No. of foam monitors –4

HOSE

a. Material diameter and length : dia-63 mm and length-15m

b. Guarantee for bursting pressure : 10 kg/cm^2

c. No. of lengths of 15 m : 37 Nos.

d. No. of branch : 38

e. Diameter of branch pipes : dia-63 mm

PORTABLE FIRE EXTINGUISERS

Name	Capacity	No. of Installations
Water type gas cartridge (water type CO2)	9 lit	26
Mechanical Foam	9 lit	50
Mechanical Foam	50 lit	8
Dry Chemical Powder (DCP)	75 kg	2
Dry Chemical Powder (DCP)	5 kg	86
Dry Chemical Powder (DCP)	10 kg	1
CO2	2 kg	11
CO2	4.5 kg	74
CO2	22.5 kg	15
ABC type	1 kg	20
ABC type	5 kg	20
ABC type	6 kg	150
Clean Agent	5 kg	03

FIRE TENDER

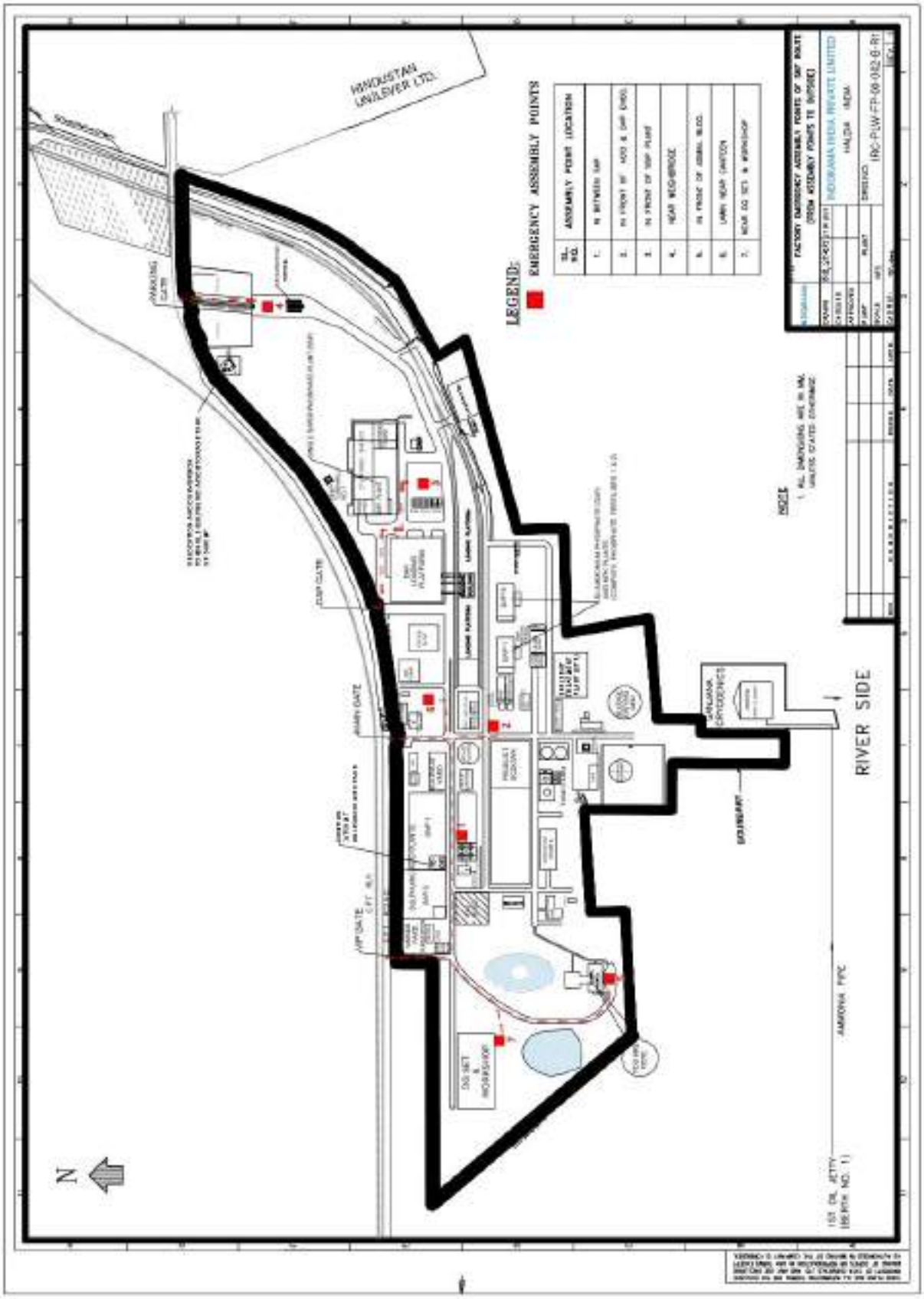
Water Tank Capacity (Lit.) : 4500
Foam AFFF Capacity (Lit.) : 500
Pump capacity (Lit./min) : 2250
Pressure (kg-f/cm^2) : 7

2.0 PERSONAL PROTECTIVE EQUIPMENTS

Name of PPE	ECC-1	ECC-2	SAP Control room	DAP-1 Control room	DAP-2 Control room	SSP Control room
PVC Suits	3	2	2	2	2	2
Rubber gloves	11	6	--	2	2	2
Gum boots	5	5	1	1	1	1
Safety goggles	9	5	1	2	2	2
Self-Contained Breathing Apparatus (SCBA) – 55 min duration	-	-	--	1	1	1
Cotton nose masks	20	20	--	2	2	2
Chemical Canister Mask	2	2	1	2	2	2
Air supplied Breathing Apparatus	--	--	2	--	--	1

Other Locations

- Individual issues to employees as per requirement
- Adequate spares maintained in stores


HINDUSTAN UNILEVER LTD.
LEGEND:
EMERGENCY ASSEMBLY POINTS
RIVER SIDE
MAIN GATE
N

3.0 LIST OF FIRST AIDERS

4.0 Display board at every assembly points to identify First Aider. First Aider to stand separately in front of respective demarked board during Emergency at Assembly points.

S.No.	NAME	Emp. ID	DEPARTMENT	CONTACT No.	VALIDITY
1	Mr. Abhirup Biswas	10153	INSTRUMENT	6290103959	31.1.2022
2	Mr. Abhinandan Pal	30101	INSTRUMENT	7585949159	31.1.2022
3	Mr. Sukdip Maity	30121	INSTRUMENT	9609937153	31.1.2022
4	Mr. Soumitra Chowdhury	10164	LAB	7407048861	31.1.2022
5	Mr. Biplab Jana	10163	LAB	8327585226	31.1.2022
6	Mr. Kuntal Mondal.	30111	PP & WH	9647200607	31.1.2022
7	Mr. Raj Kumar Jana.	30114	PP & WH	9775233046	31.1.2022
8	Mr. Suman Roy	10160	SSP	9732108339	31.1.2022
9	Mr. Sk Raju	30118	SSP	9674892533	31.1.2022
10	Mr. Avick Chakraborty	10154	ELECTRICAL	9932558067	31.1.2022
11	Mr. S.Bej	30093	ELECTRICAL	9732667371	31.1.2022
12	Mr. Purnendu Das	30098	ELECTRICAL	9434944929	31.1.2022
13	Mr. M. P. Goswami	30043	ELECTRICAL	9002029198	31.1.2022
14	Biplab Biswas	30104	SAP	8272931592	31.1.2022
15	Mrinmoy Koyal	30112	SAP	8768863098	31.1.2022
16	Silbhadra Giri.	30117	SAP	9735685173	31.1.2022
17	Debdoot Chattopadhya.	10156	SAP	9932846922	31.1.2022
18	Parimal Patra	HB Enterprise	SAP	9647235847	31.1.2022
19	Sk. Akram	HB Enterprise	SAP	8926835788	31.1.2022
20	Mr. BK Biswas	Dock Site	SECURITY	9851277957	31.1.2022
21	SK Nazrul Islam	-	SECURITY	9046303106	31.1.2022
22	Mr. Suvendu Bikash Maity	4 acre G/House	SECURITY	9434146230	31.1.2022
23	Mr. Biswajit Das	Girish More G/House	SECURITY	9733488080	31.1.2022
24	Mr Sourav Mondal	10158	DAP 1	8017411062	31.1.2022
25	Mr Prasanta Kundu	30113	DAP1	7318792765	31.1.2022
26	Mr Dasharath Kisku	30105	DAP1	7384898990	31.1.2022
27	Mr Krishanu Ghosh	30110	DAP1	7407570021	31.1.2022
28	Mr Jagannath Debnath	30108	DAP2	9134507791	31.1.2022

29	Mr Ramkrishna Shasmal	30115	DAP2	7602229790	31.1.2022
30	Mr Madan Das	30063	DAP2	9476428822	31.1.2022
31	Mr. Uday Sankar Hazra	Kabita Const.	PURCHASE	9547842532	31.1.2022
32	Mr. Harendranath Diasi	Kabita Const.	PURCHASE	8145308810	31.1.2022
33	Mr. Sukumar Sahoo	Manna Const. (Docksite)	PURCHASE	03224251029	31.1.2022
34	Mr. Ashish Jana	Pharmacist	OHC	03224660662	31.1.2022
35	Mr. Bidhan Gole	Pharmacist	OHC	03224660662	31.1.2022
36	Mr. Pradip Kar	Pharmacist	OHC	03224660662	31.1.2022

5.0 LIST OF AUXILLIARY FIRE FIGHTING TEAM

6.0 Display board at every assembly points to identify Fire Fighter. Fire Fighter to stand separately in front of respective demarked board during Emergency at Assembly point

Sl. No.	Name of Employee	Department
1	Saurav Mandal	DAP
2	Abhishek Das Gupta	HR
3	Soumitra Chowdhury	Lab
4	Biplab Jana	Lab
5	B C Patra	SSP
6	M M Sahoo	SSP
7	U Mandal	SSP
8	Gourhari Das	SAP1
9	Swapan Pramanik	SAP1
10	Surojit Das	SAP1
11	Sandip Das	DAP
14	Mofijul Islam	HSMW
15	Sabir Hussan Baidya	HSMW
16	Avijit Das	HSMW
17	Subrata Maity	HSMW
18	Sudhangsu Das	HSMW
19	Mr. D Bharsa	SSP
20	Mr. R N Achar	SSP
21	Sk. S Ali	SSP
22	Bhakti Nayek	SSP
23	Biswanath Roy	SSP
24	Saubhik Sarkar	SSP
25	Amarnath Mahato	Acids
26	Mrinmoy Koyal	Acids
27	Biplab Biswas	Acids
28	Nirmal Maji.	Acids
29	Swapan Das	Acids
30	Ramkrishna Sasmal	DAP
31	Khudiram Midyadas	DAP
32	Goutam Hazra	DAP
33	Rabindranath Das	RD Engg
34	Manoranja Barik	RD Engg

35	Bapi Gaunia	HSMW
36	Sanjoy Bala	HSMW
37	Prasanta Mistri	HSMW
38	Budhadeb Karan	HSMW
39	Mr Rajkumar Jana	WH & PP
40	CR Das	Security
41	DP Hait	Security
42	BR Mandal	Security
43	Tapas Midya	Security
44	Sriman Jana	Security
45	S Betal	Security
46	Chandan Bharasa	Security
47	Avijit Hazra	Security
48	AK Das	Security
49	AK Pandey	Security
50	Tarak Pramanik	Security
51	Niranjan Sheet	Security
52	Khokan Pramanik	Security
53	Arabinda Maity	Security
54	SK Nazrul Islam	Security
55	NK Pandey	Security
56	Kul Bahadur	Security
57	Tapas Dandapat	Security
58	Basudev Pramanik	Security
59	Suhrid Pramanik	Security
60	Swapan Jana	Security
61	Arnab Bhowmik	Security
62	Ajoy Maity	Security
63	SP Mandal	Security
64	PM Mandal	Security
65	Dudh Kr. Das	Security
66	Palash patra	Security
67	Bijoy Mandal	Security
68	Subhas Swaran	Security
69	Balai Bharasa	Security
70	Bimal Das	Security
71	Debabrata Rout	Security
72	JN Paroi	ASO
73	MP Maity	ASO
74	Supriya Chakraborty	ASO
75	Chandan Kr. Maity	ASO
76	BK Patra	Security
77	Bikash Das	Security
78	Nabadwip Das	Security
79	Ajit Maity	Security
80	BK Biswas	Security
81	Amit Kalsa	Security
82	P Khalua	Security
83	Barun Adak	Security
84	Malay Das	Security

85	Surojit Pramanik	Security
86	Susanta Mandal	Security
87	Arup Maity	Security
88	Santu Santra	Security
89	BK Lama	Security
90	DK Tiwari	Security
91	Subrata Midya Das	Security
92	Bapi Midya	Security
93	Soumitra Ghorai	Security
94	Prasanta Midya	Security
95	Dhananjoy Mandal	Security
96	Trinanjan Ghorai	Security
97	Bablu Adak	Security
98	Subhas Das	Security
99	Tapan Pramanik	Security
100	SK Roy Pramanik	Security
101	Mohan Das	Security
102	Subhas Pramanik	Security
103	Bidhan Patra	Security
104	Hari Pada Mandal	Security
105	Sukh Bahadur	Security
106	KB Dhakal	Security
107	Biswanath Mandal	Security
108	Swapan Chatterjee	Security
109	Suvendu Bikash Maity	Security
110	Ramkrishna Das	Security
111	PD Chowdhury	ASO
112	SR Datta	ASO
113	MA Khan	ASO
114	Abhijit Kr. Maiti	ASO

ANNEXURE-3

MEDICAL AID ON EXPOSURE TO AMMONIA

Exposure to ammonia effects tissues in two manners –

a. The freeze dry effects: Contact with super cooled liquid ammonia will freeze and desiccate the tissues. The damage is similar to frostbite.
b. The caustic effect: Ammonia is highly soluble in water and forms a strongly alkaline solution. When people are exposed to ammonia vapour, the body fluid dissolves ammonia and resulting corrosive alkaline solution damages tissues. An exposure to vapours will first result in lesions to eyes, mucosa, respiratory tract and gastrointestinal tract. A concentration of 0.2% will produce skin blisters and chemical burns.

Ammonia conc. (ppm)	Effect on Health
5	Odour can be detected by most people
25	TLV-TWA: recommended exposure limit for 8 hrs.
35	TLV-STEL: recommended exposure limit for 15 min
100	Can be tolerated for several hours
400	Immediate eye & throat irritation
700	May cause eye injury
1700	Laryngospasm and coughing on inhalation and glottal endema follows within a few hours
2000 – 5000	An exposure beyond 1.5 min can be fatal
5000 & above	Death may result within minutes due to respiratory arrest

People exposed to ammonia vapours should be decontaminated immediately as speed is essential. First eyes must be flushed with water after opening the eyelids for 15 minutes continuously. Contaminated clothing should be removed and skin should be flushed with plenty of water. Mouth should be rinsed. The victim should be kept in fresh air. Creams etc. should not be used.

In extreme exposure decontamination has to be very aggressive. One must rinse ears. Open skin rolls for flushing, the axilla & groin as well as the under chain should be flushed properly.

In case of exposure to liquid ammonia similar procedure has to be followed. Victim may have to put under a shower before his contaminated cloths can be removed which can become stiff due to low temperature of ammonia.

Cardiopulmonary resuscitation should be given if there are any signs of cardiac arrest or respiratory arrest. Victim can be given oxygen in case of asphyxia. Control of bleeding and treatment of shock should also begin immediately.

People engaged in rescue and first aid work themselves should not get exposed to ammonia. Care should be taken to remove contaminated clothing before a victim is put in an enclosed room or ambulance.

Following have also been recommended as a first aid measure

- Eyes can be washed with 0.5 – 1% alum. SOS ophthalmologist
- Skin can be washed with 5% citric/acetic/salycylic acid
- Inhalation of warm water vapours
- In case of asphyxia Oxygen followed by sub cut 1 cc of 1% Atropin is recommended

ANNEXURE-4

LIST OF VITAL EQUIPMENT

In case of major emergency when a decision is taken to evacuate the personnel from the factory and simultaneously bring the plants to a safe shutdown, care of following equipments should be taken on a priority basis as per the instructions in respective plant operating manuals:

Sulphuric Acid Plant (SAP)

1) Turbo blower	**1) Turbo blower**
2) Sul. Acid cir. Pp N	2) Sul. Acid Cir. Pp
3) Sul. Acid cir. Pp S	3) Clean Sulphur Pp -N/side
4) Clean sul. Pp S	4) Clean Sulphur Pp - S/side
5) Clean sul. Pp N	5) DM water Pp N/Side
	6) DM water Pp S/Side

DI-AMMONIUM PHOSPHATE PLANT (DAP)

Ammonia. Scr. Fan	Ammonia. Scr. Fan
Bucket Elevator 4204	Atomising Fan
Bucket Elevator 4206	Belt Conv. 101
Cooler Inlet Fan A	Belt Conv. 4205
Cooler Outlet Fan A	Belt Conv. 4209
Drier	Belt Conv.4212
Drier Exhaust Fan	Bucket Elevator 4204
Granulator	Bucket Elevator 4206
Induced Draft Fan	Combustion Fan
Forced Draft Fan	Cooler Inlet Fan A
De Dusting Fan	Cooler Inlet Fan B
BC4212	Cooler Outlet Fan A
BC4205	Cooler Outlet Fan B
BC4209	De Dusting Fan
BC1	Dilution Fan
	Drier
	Drier Exhaust Fan
	Granulator

SSP PLANT

Ball Mill
Den Cutter
Ball Mill I/D Fan
Mixer
Under ground Conv.
Old Vent Fan
Scrubber Fan
New Vent Fan
Bucket Elevator
Den
Roller Mill I/D Fan

FORMATS

Incident Report

Location of incident:	Date of incident:	Time of incident:
Describe how the incident occurred?		
What were the consequences of the incident?		
What action has been taken to prevent reoccurrence?		
Who has been notified of this incident?		
Persons Involved in Incident (Include contact details eg address for non-response persons)		
Name:	**Role:** **Contact number:**	
Name:	**Role:** **Contact number:**	
Witnesses names (if any)		
Name:	**Role:** **Contact number:**	
Name:	**Role:** **Contact number:**	
Reporting Officer: (print name)	**Role:**	
Signature:	**Date:**	
Supervisor - OIC/Manager/Controller: (print name)	**Role:**	
Signature:	**Date:**	

 # Complete an Injury Notification form

INDORAMA

Indorama India Pvt. Ltd.
Haldia

Press Release Template

FOR IMMEDIATE RELEASE: (DD/MM/YYY)

[Title Here]

[CITY], [STATE],[Date] – [This is the opening paragraph.

Contact Information:
[Company Name]
[Address]
[Telephone]
[Website]

Checklist for 1st person entering emergency control center.			
1	Check whether walky talky provided or not	YES	NO
2	Check whether the telephone is working	YES	NO
3	Ensure that emergency siren has been blown	YES	NO
4	Inform other team members	YES	NO
5	Inform the medical officer	YES	NO
6	Ensure the incident controller has received walky talky	YES	NO
7	Receive information on wind direction	YES	NO
8	Inform the respective assembly points not to assemble which might get affected depending upon wind direction	YES	NO
9	Inform QRT team to check the affected areas if anyone gets trapped	YES	NO
10	Inform security personnel to prepare a list of visitors inside	YES	NO

INDORAMA

Indorama India Pvt. Ltd.
Durgachack, Haldia,
District- East Medinipur
West Bengal Pin- 721602

ENCLOSURE XVII: OFF-SITE EMERGENCY PLAN

N. C. Sarkar

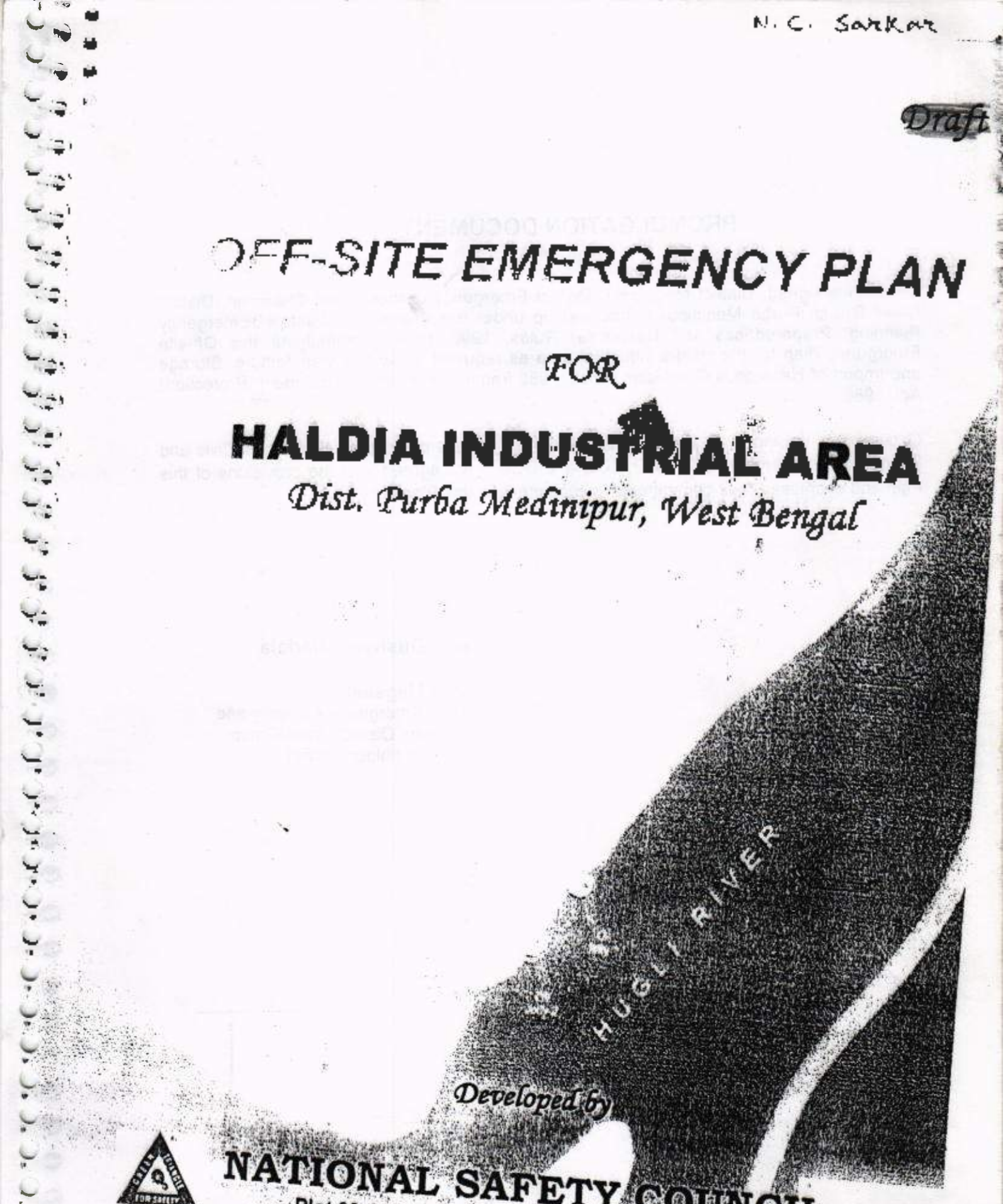
Draft

OFF-SITE EMERGENCY PLAN

FOR

HALDIA INDUSTRIAL AREA

Dist. Purba Medinipur, West Bengal



Developed by

NATIONAL SAFETY COUNCIL

Plot 98-A, Sector-15, CBD Belapur, Navi Mumbai

PROMULGATION DOCUMENT

I, the undersigned, District Magistrate, District Emergency Authority and Chairman, District Crisis Group, Purba Medinipur District set up under the Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996, hereby promulgate this Off-site Emergency Plan for the Haldia industrial area as required under the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 framed under the Environment (Protection) Act, 1986.

Occupiers of the industrial installations in the Area; Heads of Response Agencies-Civic and Industrial; and Members of MARG, LCG and DCG have agreed with the provisions of this Plan and expressed their commitment in implementing this Plan

Name: **Dushyant Narlala**

District Magistrate,
District Emergency Authority and
Chairman, District Crisis Group,
Purba Medinipur District

Dated, ...
Haldia,

INDEX

A. INTRODUCTION

A1 BACKGROUND

The Government of West Bengal, Department of Environment, requested National Safety Council (NSC), an apex national-level autonomous body set up by the Government of India, to prepare an Off-Site Emergency Plan for Haldia. NSC accepted the assignment as an activity under its National APELL Centre (NAC) Project and has prepared this Plan in line with the accepted international guidelines available and after deliberations among its own senior officers, experts in this field at various levels from industries, professional bodies, Factory Inspectorates/Directorates, MARG Groups and others. After preparing the plan it has been discussed threadbare with the Co-Ordination Committee constituted for the purpose of preparation of the Off-Site Emergency Plan of Haldia. This Off-Site Emergency Plan has been officially accepted by the Haldia Local Crisis Group and is now being made public.

A2 BASIS OF THE PLAN

A2.1 Structure

Following documents/statutory provisions have been used for developing the structure of this off-site emergency plan -

a) Schedule XII of the Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989.

b) Hazardous Materials Emergency Planning Guide, published by National Response Team (NRT-1), Environmental Protection Agency (EPA), USA :2001. In this context Hazardous Materials Emergency Response Plan of Hamilton Country, OHIO has been prominently referred among other references as given in Section H of this plan.

A2.2 Major Considerations

i) Preparation of the on-site emergency plan is a statutory responsibility of the occupier of the MAH Unit under the MSIHC Rules. Individual MAH units have carried out the Risk Assessment and used corresponding scenarios in the preparation of the on-site emergency plans. Scenarios for this off-site emergency plan have been provided by the respective MAH Unit as one having potential to cause an off-site emergency.

ii) There is a separate section dealing with emergency arising out of transportation.

iii) The plan defines roles & responsibilities of different agencies, organisations, institutions etc in the Off-Site Emergency Management System in the event of a hazardous material incident. As this plan has been discussed and finalised in consultation with the stakeholders and has been promulgated by the Crisis Group headed by the District Magistrate (DM) who is the District Emergency Authority (DEA), authorisation by the District Magistrate would be construed and no separate authorisation by him for discharging the responsibilities would be needed under this Plan.

iv) The plan would develop further as and when the progress is made and experience incorporated in the plan. There may be situations, which are not covered under the plan. In such cases the decision would be taken by the Crisis Group headed by the

DM. Depending upon the outcome of such decisions, the required amendment would be made in the Plan.

v) The plan pre-supposes the role of the DM in organising shelters and transport facilities during the emergency. It also pre-supposes role of the Crisis Group in planning and monitoring education & training and implementation of this off-site plan and recommend to the appropriate authorities for strengthening their response agencies.

vi) The Mutual Aid Response partners have an important role to help in controlling the on-site emergency. Controlling on-site emergency effectively would only prevent off-site emergency.

A2.3 Data Used

i) The data given in the Profile of the District under Point No. A-5 of this Plan.

ii) Contact details of Works Main Controller/his alternate and normal attendance of the MAH Units as **ANNEXURE-1.**

iii) Hazardous chemicals & their inventory in the MAH Units (**ANNEXURE-2**) and the same information has been re-arranged Chemical-wise and tabulated in **ANNEXURE-3**

iv) Material Safety Data Sheets (MSDS) of the above hazardous chemicals **(ANNEXURE - 4)**

v) The individual MAH units have carried out the risk analysis and the corresponding scenarios are used in their on-site emergency plans. For the preparation of this off-site emergency plan the scenarios identified/provided in the on-site emergency plans by the units which have potential to escalate in to off-site and leads to emergency have been summarised and enclosed as **ANNEXURE -5.**

A3. PURPOSE AND SCOPE OF THE PLAN

A3.1 Purpose

The purpose of this plan is to develop, implement and maintain an integrated emergency management system for protection of people, property and the environment in the event of an off-site emergency caused by hazardous material incident.

The ultimate goal is to reduce the vulnerability of the area due to any emergency, to save lives and protect property by developing capabilities that mitigate the effects of, prepare for, respond to and recover from any emergency that could affect the area.

A3.2 Scope

This Off-Site Emergency Plan covers technological emergencies arising out of industrial accidents and covers the following

I) **Geographical Coverage** : The Plan covers the Haldia industrial pocket as mentioned under ' Profile of the Area' Point No. A5 below.

II) **Emergency Scenarios** : As mentioned under point No. A 2.3 'Data Used' Serial No (v)

III) **Other Matters :** This Plan document provides guidance but does not cover details of response techniques and training and emergencies arising out of nuclear accidents.

A4. STATUTORY FRAMEWORK

The District Collector, District Magistrate in case of Haldia Area, being the District Emergency Authority (DEA) notified by the State Government; and the Chairman of the Crisis Group set up under the Chemical Accidents (Emergency Planning, Preparedness & Response) Rules, 1996 has the statutory obligation for preparation of the off-site emergency plan and for keeping it up-to-date under Rule 14 of the MSIHC Rules.

Salient statutory provisions relating to the Off-Site Emergency planning are under the following statutes :

1. The Factories Act, 1948 (Section 41-B)
2. The West Bengal Factories Rules, 1958 [Rules 63(D to I)]
3. The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 [Rule 13 & Schedule 11, Rule 14 and Schedules 5 & 12]
4. The Chemical Accidents (Emergency Planning, Preparedness & Response) Rules, 1996 [Rules 5, 7, 8; Schedules VII & VIII and Rules 9, 10, 11 and 12]

A5. PROFILE OF HALDIA AREA

Haldia is a Harbour. The area is bounded by 3 rivers viz. Hooghly, Haldi and Rupnarayan while at the fourth side there is a Hijli Tidal Canal. Haldia Municipal Area is spread over 103 sq. kms. and has a total population of 1,70,695. It has 17 MAH units out of total 42 industrial units (list enclosed as **ANNEXURE – 6**). These industrial units are situated at the bank of the river Hooghly.

The total industrial employment is ---. It constitutes to about -- % of the total population.

The Map of Haldia is enclosed as **ANNEXURE - 7.**

A6 PLANNING FACTORS – LOCAL CONDITIONS

i) **Size and Location :**
Haldia is spread over 103 square kilometres of land. The Area is surrounded by Hooghly, Haldi and Rupnarayan Rivers. The map showing surroundings area of Haldia is enclosed (**ANNEXURE-8**)

ii) **Topography**
It is a Plain Terrain area. The map of the area enclosed as ANNEXURE - 8 gives information about the topography of the Haldia

iii) **Surrounding Terrain**
All the areas are plain at sea level

iv) **Land Use**
Haldia is covered mainly by residential complexes. It also includes commercial & industrial establishments. The industrial units are located in the area as listed in ANNEXURE - 6. There is a continuing residential, commercial and industrial development in the area.

A7. CONCEPT OF OPERATIONS

A7.1 Governing Principles

i) The governing principle of this Plan is that identified groups/ persons, by and large, w have capability to make protective responses in different situations aris'.'; out o hazardous material incident involving its handling including transportation.

ii) Depending upon the seriousness of the incident, protective responses could include in place sheltering, evacuation.

iii) All situations cannot be covered under the plan. It is, therefore, necessary to follow th communication network system as envisaged under this plan, to facilitate prompt decision and appropriate actions depending upon the situation.

iv) As soon as there is a fire, spillage, toxic release or any other emergency, it will b handled by the concerned management of the industrial unit as per its on-site emergency plan. This Off-Site Emergency Plan would come into force, if the inciden escalates into a major emergency and becomes beyond the control of the industria management.

A7.2 Organisational Roles & Responsibilities.

1) **Haldia Local Crisis Group**

a) It has been set up as per the provisions of the Chemical Accidents (Emergency Planning, Preparedness & Response) Rules, 1996 under the Chairmanship of ..... and the Member Secretary of which is .....List of its Members along-with their contact details are given in Part 'B' viz. Emergency Assistance Telephone Roster (B5)

b) Responsibilities of the Crisis Group as laid down in the above statute are :

i) Prepare local off-site emergency plan

ii) Train personnel involved in management of chemical accidents

iii) Educate the population likely to be affected in a chemical accident about the remedies and existing preparedness in the area.

iv) Conduct at least one full-scale mock-drill of a chemical accident at a site every six months and forward a report to the DCG

v) Respond to all the public enquiries on the subject.

2) **Industrial Units**

i) Provide technical guidance for development of the Off-Site Emergency Plan.

ii) Help and Participate in organising emergency drills.

iii) Provide technical advice on handling emergencies arising out of specific chemicals. A list of technical experts and their contact details in different areas of expertise is given in ANNEXURE - 9.

iv) Help in conducting training at different levels

v) Provide resources (Trained Man-power and equipment) as required by the Works Main Controller of the affected industrial unit.

3) West Bengal Pollution Control Board

i) Compile and keep ready information about neutralisation techniques for the hazardous chemicals being handled in the Area.

ii) Assess the impact of leaked material on health and environment and inform the results to OM/ADM, Police and the state public health department and if necessary, the water works and sewerage authorities. It may use the services of the laboratories. The list of laboratories enclosed as **ANNEXURE -10.** The MAH units having such facilities would also provide necessary support.

iii) Carry out post emergency study of the environment and suggest corrective measures.

iv) Monitor the post emergency environment and inform the DM when the area becomes safe and enable him to call off the emergency.

v) Assist water supply/sewerage department in the matter related to contamination of water/soil

4) Factory Inspectorate

i) The Factory Inspectorate would liaise with the industrial units for:

- Collecting and compiling necessary information in advance.
- Identifying and organizing required resources from industrial units to handle the emergency.

ii) Create database on expertise available for different chemicals handled in the area.

iii) Provide technical help to the Crisis Group as and when needed

5) Regional Transport Office, Haldia

At the time evacuation, people would be required to be shifted to the identified shelters The Regional Transport Office (RTO) -

i) make transport arrangements from the Haldia Bus Depot, industry and private transporters .

ii) compile the following information in advance.
   a) Vehicles available with the Haldia Bus Depot, industry and private transporters
   b) Escape and approach routes to the assembly/shelter points.

List of private transporters is given in **ANNEXURE – 11**.

6) Station Master, Haldia Railway Station

On getting the message from the Police Control Room about an emergency, the station master should -

i) Inform all railway gates in the area about an emergency.

ii) Inform nearby stations about emergency and take appropriate actions

iii) Take care of railway passengers and if required inform RTO for providing vehicles to evacuate the passengers.

7) NGOs/Voluntary Organisations

The roles of these organisations are

i) To render help to Civil Supply Officers at shelter places
ii) Take care of the evacuees at shelters
iii) Help in arranging for food and essential commodities

The list of NGOs/Voluntary Organisation in Haldia is enclosed as ANNEXURE- 12.

8) **Haldia Municipality**

Provide administrative support to the DM in Pre, during and post emergency activities relating to planning, preparedness & response.

9) **Haldia Development Authority**

i) Prepare information on availability of water.
ii) Establish requirements of water for fire suppression.
iii) Participate in Pre, during and post emergency activities relating to planning, preparedness & response.
iv) Respond to the information required in connection with off-site emergency planning, preparedness & response.
v) Provide un-interrupted water supply in shelters

10) **Civil Defence**

i) Help Firemen in rescue operations.
ii) Help Police in informing the public, relatives of victims, schools.
iii) Help paramedical personnel in transferring injured.

11) **Haldia Dock Complex**

i) Upon getting information about major emergency, ships are moved out of area liable to be affected

12) **Telephone Department**

i) Ensure un-interrupted communication network among the industrial units, response agencies and other organizations during off-site emergency.
ii) Advise for effective communication systems.

13) **Haldia Fire Station**

i) Provide support to industrial unit during emergency.
ii) Prepare plan for Human Service required for the emergency response.
iii) Prepare plan for Fire and Rescue.
iv) List out Tasks of the Fire Fighters.

14) **Police**

i) Provide field operations support to the Incident Control Post (ICP).
ii) Crowd Control
iii) Traffic Control
iv) Maintain Law & Order situation.
v) Help in evacuation.
vi) Warn the Public.
vii) Inform relatives of victims.

15) **State Public Health Department**

i) Plan the medical resources.
ii) Provide First-Aid and Medical Treatment.
iii) Arrange training of Medical & Para-Medical Staff in Medical response to emergencies.
iv) Plan antidotes.

16) **Public Works Department**

i) Maintain approach roads to industrial units.
ii) Plan & arrange earth-moving equipment and manpower to build dykes/dams or other means of containment when needed.
iii) Assist in containing the spillage of hazardous material.

17) **Electric Supply Company**

Disconnect electrical supply to the affected area in consultation with the Works Main Controller

18) **Civil Supplies**

Plan and ensure providing adequate supplies in shelters.

A3. PLAN USE

A3.1 Instructions on Plan Use

- All persons identified in this plan must read the plan and be clear about their roles and responsibilities.
- The plan outlines procedures to deal with possible off-site emergencies.
- The plan outlines the roles & responsibilities of organizations including response agencies in response to an off-site emergency involving hazardous materials.
- The plan should be used for pre-incident planning and guidance.
- The plan provides guidelines on response to protect the people, property and the environment in the event of an off-site emergency due to a hazardous material incident

A3.2 Plan Distribution

a) **Distribution List**
Controlled copies of this plan would be issued to response agencies, including the Local and District Crisis Groups Factory Inspectorate, various civic response agencies, the Major Accident Hazard (MAH) units in the Area and also to the identified technical experts. The distribution list of persons/organizations to whom the copies of this plan have been given is enclosed as **ANNEXURE - 13**

b) **Procedure for Distribution**
Each distributed copy of the Plan would be marked as **"CONTROLLED COPY"** with a serial number. The record would be maintained in the Master Copy, which will be in possession of the Member Secretary of the Haldia Local Crisis Group (HLCG)

A9. AMENDMENTS IN THE PLAN

A9.1 Procedure for amendments to be included in the Plan

A. Changes in Addresses, Telephone numbers

Changes in addresses, telephone numbers would be made by the Member Secretary o. the Crisis Group for which no formal approval would be required. It is his responsibility tc ensure correctness of this information, incorporating the change in the plan and intimating to the holders of the copies of the Plan.

B. Changes other than those in Addresses and Telephone numbers

i) Amendment to the Plan may be initiated by the HLCG, or any participating agency.
ii) The amendment would be put up before the HLCG for discussion and would be evaluated by it for inclusion in the Plan
iii) After discussion, decision would be taken by the DM in consultation with the Chairman of the HLCG.
iv) After its approval, the Chairman of the HLCG would direct its Member Secretary to officially convey the amendment to all those holding the controlled copies of the plan and maintain its record as per the procedure given underitem No. A9.2 below.
v) The amendment would be sent by the Member Secretary of the LCG along with an acknowledgement slip to all controlled copy holders, who will be responsible to incorporate the amendment in their respective copies and return the signed acknowledgement slip to the Member Secretary.
vi) All amendments will bear the date of amendment and the signature of Chairman c LCG.

A9.2 Record of Amendments

Maintaining an up-to-date version of the plan at all times is of prime importance. The Member Secretary of the LCG shall maintain a "Change Record Sheet" (format in **ANNEXURE - 14**) in the Master Copy of the Off-Site Emergency Plan and keep it updated.

All approved amendments to the plan following the procedure given under item No 9.1 above shall be carried out and distributed to the holders of the controlled copies of the plan

All amendments to the plan shall be recorded in a bookkeeping style so that all users of the plan will be aware that they are using the current plan

The record would be maintained in the "Change Record Sheet". The format of "Record of Amendment" by the holder of the Plan is given in **ANNEXURE - 15**.

A10. RECORD OF INCIDENT INFORMATION

It is necessary to have a record of incident information as conveyed. The format of recording "Incident Information Summary" is enclosed as **ANNEXURE - 16**. The initial information is critical. Answers to some of the questions may be unknown by the caller, but it is important tc gather as much information as possible very quickly in order to facilitate decisions on public notification and evacuation.

B. EMERGENCY ASSISTANCE TELEPHONE ROSTER

All the telephone numbers given in table below are available round the clock. Any change in telephone number should be intimated by the person/group/organisation to the Member Secretary of the LCG who would incorporate the same immediately and convey it to all the holders of the Controlled copies of the Plan

B1 24-Hour Emergency Response Telephone Numbers:

District Magistrate (DM)	03228-266098 (O) 03228-266120 (R) 09434000700 (M)
Additional District Magistrate (ADM), Haldia	03224-275568 (O) 03224-262100 (R) 09434008600 (M)
Haldia police Station	03224-251112 (O)
Haldia Fire Station	03224-252500 (O)
Emergency Control Room(ADM's Office)	03224-278100 / 275235 (O)
Alternate E.C.R (Haldia P.S)	03224-251112 (O)

B2 PURBA MEDINIPUR DISTT.

Sl. No.	Agency	Telephone Number			
		STD Code	Office	Reside-nce	Mobile
	District –Level Govt. Officials				
1.	District Magistrate & Chairman, Purba Medinipur DCG	03228	266098 FAX 269500	266120	09434000700
2.	Additional District Magistrate, Haldia	03224	275568 FAX:278100	262100 TELEFAX	09434008600
3.	Additional District Magistrate, General, Purba Medinipur	03228	269667	266091	
4.	Additional District Magistrate, Development	03228	269917	269855	
5.	Additional District Magistrate, Civil Defence, Purba Medinipur	03228	269729	-	
6.	Additional District Magistrate, (L.R.)	03228	266070	269831	
7.	Additional District Magistrate, Zilla Parishad, Purba Medinipur	03228	269674	269855	
8.	Additional District Magistrate, Relief	03228	269729	-	
9.	S D Controller, Food & Supply	03228	266036		

12

10.	District Information Office	03228	266113	
11.	Purba Medinipur Zilla Parishad, Tamluk	03228	269677	-
12	Superintendent of Post Office, Purba Medinipur	03228	266118	-

Sl. No.	Agency	Telephone Number			Mobile
		STD Code	Office	Residence	
Tahsil Level (Tamluk) Govt. Officials					
13.	Sub Divisional Officer., Tamluk	03228	266220	266020	
14.	Assistant Labour Commissioner, Tamluk	03228	266129		
15.	District Employment Office, Tamluk	03228	266190		
16.	A.E.P.W.D. Road, Tamluk	03228	266022		
17.	District Superintendent of Excise, Tamluk	03228	266009		
18.	Executive Engineer, PWD(Roads), Tamluk	03228	266179	266180	
Police					
19.	Superintendent of Police, Purba Medinipur	03228	269580	269602	
20.	Additional Superintendent of Police, Hq, Purba Medinipur	03228	269764	269970	
21.	Additional Superintendent of Police, Haldia	03224	278116	278116	
22.	Sub-divisional Police Officer, Tamluk	03228	266063	257227	
23.	Sub-divisional Police Officer, Contai	03220	255136	255003	
24.	Sub-divisional Police Officer, Egra	03220	245248	245248	
25.	Sub-divisional Police Officer, Haldia	03224	278109	274147	
26.	Durgachak Police Station	03224	271111	-	
27.	Bhabanipur Police Station	03224	251113		
28.	Sutahata Police Station	03224	281344		
29.	Mahishadal Police Station	03224	240237		
30.	Nandigram Police Station	03224	232551		
31.	Nandakumar Police Station	03224	275243		
32.	Additional S.P., Tamluk	03228	266440	250218	
33.	Police Wireless Station	03224	252670	-	
Health					
34.	Chief Medical Officer of Health, Purba Medinipur	03228	269595	269620	

35.	Deputy C.M.O.H., Tamluk	03228	266059		

Block Development Offices

36.	Block Development Officer, Sutahata	03224	281508	281895	
37.	Block Development Officer, Mahishadal	03224	240232	240232	
38.	Block Development Officer, Nandigram I	03228	232313	232648	
39.	Block Development Officer, Nandigram II	03228	271203	271203	
40.	Block Development Officer, Nandakumar	03228	275239	275239	

B3 HALDIA AREA

Sl. No	Agency	Telephone Numbers		
		STD Code	Office	Residence
1	Additional District Magistrate, Haldia	03224	275568	262100
2.	Chief Executive Officer, Haldia Development Authority	03228	274154	263565
3.	Haldia Municipality	03224	252996	
4.	Public Works Dept	03224	274157 / 114	
5.	Sub-Divisional Officer, Haldia	03224	274015	263131
6.	Block Development Officer, Haldia	03224	284287	284287
7.	Public Health Dept	03224	274103	
8	Nodal Hospital (Haldia Sub-divisional Hospital)	03224	278112 274108	
9.	Hospital- 1 (I.O.C.Hospital)	03224	262101	
10.	Hospital- 2 (KoPT Hospital)	03224	262102	
11	Hospital- 3 Basulia Rural Hospital	03220	240243	
12	Hospital- 4 (Purba Medinipur District Hospital)	03228	266059	
13.	Electric Supply	03224	275196	
14	Dy Commandant, C.I.S.F, Haldia Refinery	03224	252159	263299
15	Inspectors of Factories, Haldia	-	03224-274105	033-23379430
16	State Pollution Control Board	03224	274190	
17	Railway Authorities	03224	263173	
18.	Sub-divisional Information & Cultural Officer, Haldia	03224	274318	
19	Commandant, Coast Guard, Haldia	03224	263217	263254
20	Haldia Fire Station	03224	252500	

21.	DGM (Telephone), Haldia	03224	253100	253000
22.	Dy. Controller of Civil Defence, Haldia	03224	272986	
23.	Dy. Labour Commissioner, Haldia	03224	274224	
24.	Env. Engineer, WBPCB, Haldia	03224	274190 276847	
25.	Executive Engineer, Water Supply, Haldia (PHE)	03224	274148 : 103	
26.	Superintending Engineer, WBSEB, Tamluk	03228	266255	
27.	Executive Engineer PWD, Haldia (Construction)	03224	2741 4 157	
28.	Divisional Engineer, Haldia, (O&M) Division (WBSEB)	03224	275196	
29	Commandant, C.I.S.F, Haldia Dock Complex	03224	252229 258229	263335
30.	Asstt.Engineer, Haldia High Way Sub.Division.(PWD)	03224	275570	
31.	Chief Inspector of Factories	033	221032 : 224862 : Ext.354 :	25567864
32.	Dy. Chief Inspector of Factories	033	22274418	

B4 Members of Purba Medinipur District Crisis Group

Sl No.	Name and Address		Telephone		
			STD Code	Office	Residence
1.	District Collector, Purba Medinipur	Chairman	03228	266098	
2.	Divisional Engineer, WBSEB, Haldia	Member	03224	266159	
3.	Divisional Fire Officer, E-Division	Member	033	26668111	
4.	District Information and cultural Officer, Purba Medinipur	Member	03228	266113	
5	Controller of Explosives	Member	033	22486600	
6.	Additional District Magistrate (Civil Defence)	Member	0228	2696729	
7.	Deputy Supdt. of Police (Head Quarters)	Member	03228	269766	
8.	Chief Medical Officer of Health, Purba Medinipur	Member	03229	269595	
9	Chairman, Tamluk Municipality	Member	03228	266007	
10.	Chairperson, Haldia Municipality	Member	03224	252996	
11.	CEO, Haldia Dev. Authority	Member	03224	274154	

12.	Executive Engineer, PHE Dept, Purba Medinipur	Member	03228	266119	
13.	Environment Engineer, Haldia Regional Office, WBPCB	Member	03224	276847	
14.	Principal Agricultural Officer, Purba Medinipur	Member	03228	266010	
15.	Regional Transport Officer, Purba Medinipur	Member	03228	269937	
16	Shri.Pranab Das, C/O Shramik Bhawan, Sukumar Sengupta Sarani,P.O.Debbhog. P.S.Haldia, Purba Medinipur	Member	03224	252604	
17.	Shri. Amit Chatterjee, Senior Manager (Safety and Environment), Kolaghat Thermal Power Project, Purba Medinipur	Member	03228	231110	
18.	Dr.T.K.Bhattacharya, Chief Medical Officer, Indian Oil Corporation Hospital, Haldia	Member	03224	262101	
19.	Dr.A.Sarkar, Medical Superintendent, Kolkata Port Trust Hospital, Haldia	Member	03224	262102	
20.	Shri Sujit Basu, Deputy General Manager (HSE), MCC PTA India Pvt Ltd.	Member	03224	278102	
21.	Shri.S.R.Ghosh, Vice-President, HPL Haldia	Member	03224	178113	
22.	Block Development Officer, Haldia	Member	03224	284287	284287
23.	Sub-divisional Officer, Haldia	Member	03224	274015	263131
24.	Sub-divisional Officer,Contai	Member	03220	255001	255002
25.	Sub-divisional Officer, Tamluk	Member	03228	266220	266020
26.	Sub-divisional Officer, Egra	Member	03220	245500	245600
27.	Inspector of Factories, Haldia, Purba Medinipur	Member Secretary	03224	274105	

55 MEMBERS OF THE HALDIA LOCAL CRISIS GROUP

Sl. No.	Name & Address	Telephone Number		
		STD Code	Office	Residence

B6 MAH UNITS IN HALDIA

Sl. No	Name of Unit and Contact Person	Telephone Number(STD CODE-03224)		
		Office	Residence	Mobile
1.	Bharat Petroleum Corp Ltd , Haldia Coastal Installation Manager Installation	251103	263174	-
2	Consolidated Fibres and Chemicals Ltd. Executive Director	253885	283231	
3.	Exide Industries Ltd. Mr. Sourav Ghosh, Chief Operating Manager	252256	263106 262395	09434050538
4	Haldia Petrochemicals Ltd. Mr. S.R. Ghosh, Head-Plant	274874	269001	09830059[illegible]
5.	Hindustan Petroleum Corp. Ltd.-Haldia Terminal Manager Installation	252239	263639	
6.	IBP. Co. Ltd., Haldia Terminal Mr.Alok Kr.Das,Terminal Manager	273413	275171	
7.	IOCL- Haldia Refinery Mr. B.R. Choudhry, Executive Director	252151 253459	263405	
8.	IOCL – Marketing Division Mr. S.P.Babu, SRC	252668	263223	
9.	IOCL – Haldia Barauni Crude Oil Pipeline Chief Operating Manager	275361	263015	
10.	IndianOil Petronas Pvt.Ltd Mr. Amales Datta, CTM	275797	265570	09434024803
11.	MCC PTA India Corp.Pvt.Ltd. Mr. Y.Kasal, Dir.(Production)	264200	264257	
12.	Reliance Industries Ltd.-MC Terminal. Mr.G Saroa,Terminal Manager	305031	309237	09332313656
13.	Sanjana Cryogenic Storages Ltd. Mr J.Sengupta,Factory Manager	253760	277727	311334
14.	Shaw Wallace Agrochemicals Ltd. Mr R.N.Roychoudhury, Factory Manager	252601	263285	09434018502
15.	Tata Chemicals Ltd. Mr.Ashok Sil, Safety Manager	251023	-	094343006[illegible]6
16.	United Storages and Tanks Termina Ltd. Mr.M.Khusnood, Manager	253788	98322346[illegible]	943[illegible]
17.	Bharat Petroleum Corp Ltd., Tank Wagon Gantry			

B7 MEDIA

Sl. No		STD Code	Office	Residence
1.	Correspondence AIR/PTI	03224	283516	
2.	Haldia TV	03224	252646	
3.	Art Press, Durgachak	03224	273339 276108	
4	Apanjan	03224	252605	
5.	Samachan Press, Durgachak	03224	274262	

C RESPONSE FUNCTIONS

IMMEDIATE ACTIONS AT A GLANCE

STD CODE OF HALDIA :03224

INFORM HALDIA POLICE STATION	*252112*
INFORM DM	Office: *266098* Mobile: *9434000700* Res.: *266120*
INFORM ADM	Office: *275568* Mobile: *9434008600* Res.: *262100*
INFORM HALDIA FIRE STATION	*252500*
INFORM NODAL HOSPITAL (Haldia Sub-divisional Hospital) INFORM MUTUAL PARTNERS	278112 274108

C1 INITIAL NOTIFICATION OF RESPONSE AGENCIES

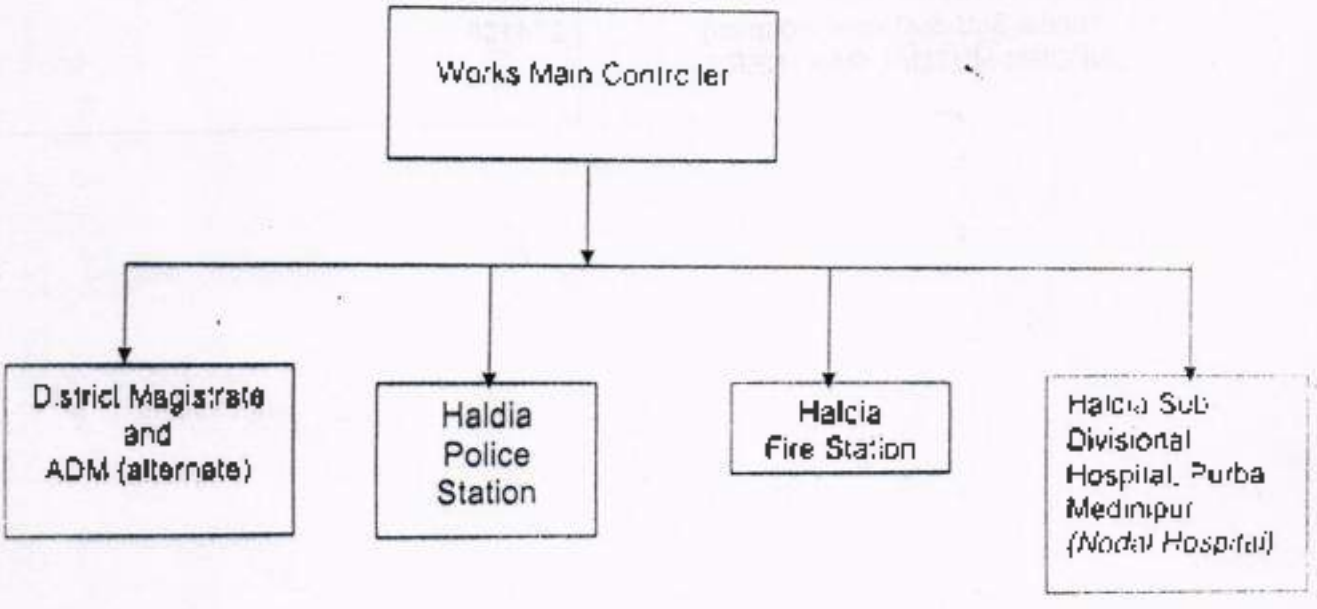
Procedure

When Hazardous Material incident takes place in an industrial unit it will be handled by the unit concerned in accordance with their on-site emergency plan.

i) If the Works Main Controller (WMC) of the affected industrial unit, identified in its on-site emergency plan, feels that the incident is likely to escalate into an off-site emergency, he would notify the public response agencies (Haldia fire station, Haldia Police Station and nodal hospital) requesting them to organize and provide necessary response and simultaneously to the DM/ADM.

ii) The Haldia Police Station would inform its Control room. The police control room would get in touch with other agencies in their respective field.

The block diagram depicts the above procedure



C2 EMERGENCY CONTROL CENTRE (ECC)

An Emergency Control Centre (ECC) is the place from where the operations for handling and controlling of an off-site emergency are directed and coordinated. It will be a coordinating and reporting centre for all agencies and would be manned 24-hour. ECC and alternate ECC will be operated and maintained by the ADM and Police authorities respectively.

C2.1 Location

The ECC is located at Office of the Additional District Magistrate, Haldia while Haldia Police Control Room will be the alternate ECC.

If the situation demands, the DM/ADM would decide to set up a Sub-ECC in the emergency control room of an industrial unit nearby considering safety and ease of operations and inform to the concerned unit accordingly.

C2.2 Equipment and Facilities in the ECC

- Internal and external telephones.
- Wireless communication.
- Public Address (PA) system
- Personal Protective Equipment (PPE).
- A copy of the Haldia Off-Site Emergency Plan.
- Other reference documents, including a set of Tremcards, MSDS and copies of the on-site emergency plans of MAH units
- Detailed map of the area, including the surrounding areas.
- Telephone numbers of response agencies, technical experts and other key personnel

C2.3 Organisation

The District Magistrate or Additional District Magistrate (alternate) would be the head of the ECC. He would be assisted by some persons for communicating with different agencies.

C2.4 Activation

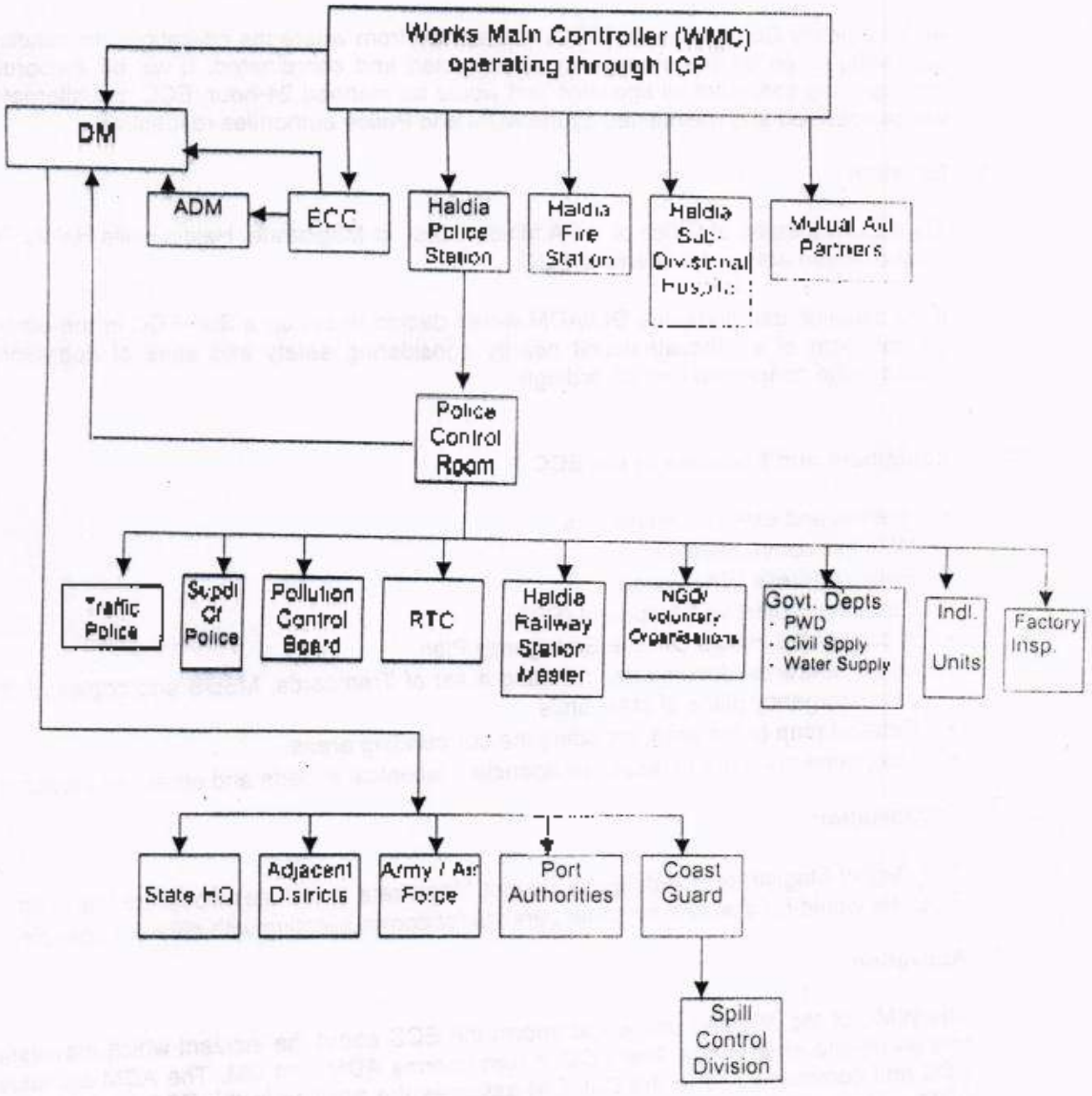
The WMC of the affected unit would inform the ECC about the incident which may escalate into an off-site emergency. The ECC in turn informs ADM and DM. The ADM activates the ECC and communicates to the DM. DM assumes the position in the ECC till such time the ADM works as ECC in-charge. The ECC in-charge gets in touch with the WMC and gets appraise of the situation. Depending on the situation and in consultation with the WMC he takes necessary steps such as summoning additional help, expert advice.

C3 DIRECTION AND CONTROL

C3.1 General

The direction and control action is the combined capability of and coordination among the Incident Command Post (ICP) & Works Main Controller (WMC) of the affected industrial unit, Response Agencies, Sub-ECC and ECC. Exchange of critical information among them enables the first response efforts and the support operations to be synchronized.

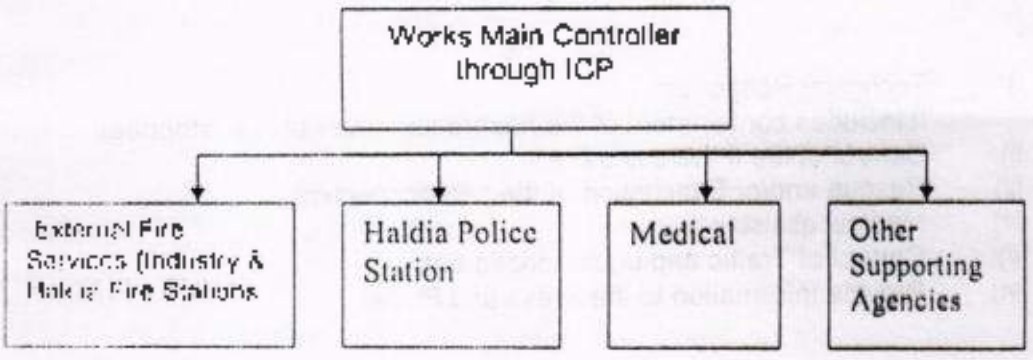
C3.2 Chain of Communication



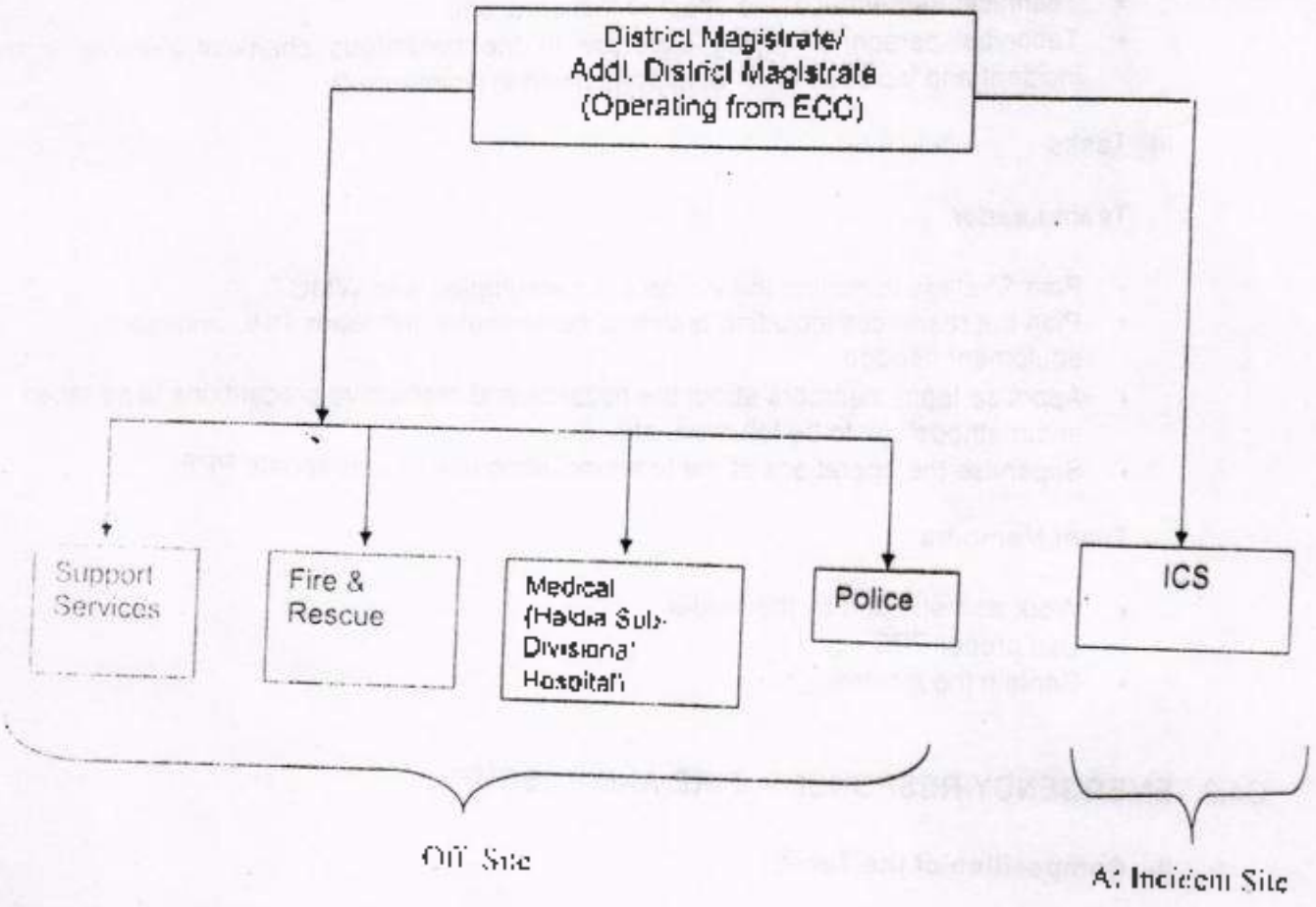
The Incident Command Post (ICP) is a place on site through which the WMC would operate to control the incident through internal as well as external response agencies and he will be working in consultation with DM. The DM would provide necessary external help as sought by WMC

C3.3 Incident Command System (ICS)

The ICS would be a system handling the emergency at the affected site.



C3.4 Chain of Command



C4 EMERGENCY RESPONSE TASKS

i) Technical Response
It includes containment of the hazardous materials i.e. stoppage of leak.
ii) Control of fire if there is a fire.
iii) Rescue and/or Evacuation of the persons/victims
iv) Medical assistance.
v) Control of Traffic and unauthorized entry.
vi) Provide Information to the Press and Public

C4.1 EMERGENCY RESPONSE – TECHNICAL

I) Team Composition

- Team Leader (Incident Commander) as identified under the on-site emergency plan of the affected industrial unit
- Technical Personnel of the affected industrial unit.
- Technical personnel having expertise in the hazardous chemical involved in the incident and included in list of experts given in Annexure-9

II) Tasks

Team Leader

- Plan Strategy to control the incident in consultation with WMC
- Plan the resources including technical personnel in the team, PPE and other equipment needed.
- Appraise team members about the hazards and respective precautions to be taken and methodology to be followed, etc.
- Supervise the operations of the team including use of appropriate PPE.

Team Members

- Work as instructed by the leader.
- Use proper PPE.
- Contain the incident.

C4.2 EMERGENCY RESPONSE – FIRE AND RESCUE

I) Composition of the Team.

a) Team Leader

At the Incident site
In-charge of Fire Department of the affected industrial unit.

At Other site(s)

The first senior official responding to fire incident

b) Team Members

- Fire personnel of the affected industrial unit.
- Fire personnel of the Mutual Aid Partners.
- Fire personnel of the Fire Station of Haldia.
- Other Fire personnel.

ii) Tasks

a) Leader

- Earmark the zones, i.e., Hot, Warm and Cool (Refer ANNEXURE 17).
- Assess the extent of emergency and the resources required. Communicate to WMC in case of industrial unit and to DM in case of other sites to enable to organise the same.
- Plan the response.
- Take appropriate actions to mitigate the emergency and to restore normalcy
- Decide and ensure proper PPE.

b) Team Members

- Rescue any injured or trapped persons. Give priority to saving life and preventing further injury.
- Extinguish / Control fire
- Conduct decontamination or containment as long as needed
- Remain on the scene as long as needed, without taking undue personal risk.

C4.3 EMERGENCY RESPONSE – MEDICAL

i) Team

a) Nodal Hospital – Haldia Sub Divisional Hospital
b) Other Hospitals:
Names of Hospitals, their addresses and facilities are provided in ANNEXURE – 18.

ii) Tasks

Nodal Hospital

- On receiving the information from the WMC of the affected industrial unit ASK about the type of emergency, nature of injury and number of casualties, assess the resources required
- Plan the medical response on the basis information received
- Organise immediately first-aid of accident victims.
- Co-ordinate with other Hospitals
- Carry out the tasks as per the hospitals for treating the accident victims as given below.

Other Hospitals

- Render first-aid to the victims
- Decontaminate casualties and provide medical treatment for chemical exposure, burns, etc.
- If required co-ordinate with pathological laboratories for deciding line of treatment.
- Co-ordinate with blood banks, if necessary.

iii) Facilities available for Medical Response

- Hospitals/Medical Centres (Govt., Private and Industrial)
- The organisations providing Ambulances and the number of ambulances each one can provide are given in **ANNEXURE – 19**
- Blood Banks in the area are listed in **ANNEXURE-20.**
- 24-hour chemist shops (list in **ANNEXURE-21**)
- Pathological laboratories (list in **ANNEXURE -22**)

C4.4 EMERGENCY RESPONSE – POLICE

Locations of Police Station and Police Control Room are shown on the Map enclosed as **Annexure – 7.**

i) Tasks

- Liaise with DM and others as per the chain of communication under para C3.2
- Reschedule the traffic routes and control the traffic movement
- Cordon off roads leading to the incident site.
- Ensure easy access for emergency responders to the incident site.
- Ensure easy transfer of injured persons to hospitals
- Help in evacuating the public, if required.
- Control evacuation routes.
- Control curious onlookers from going near the danger zone
- Maintain law & order in the affected and its surrounding area during and after the emergency.
- Provide help in identifying dead and dealing with casualties.
- Inform relatives of death or injury.

ii) Equipment and Facilities at Police Control Room

- The area map indicating the locations of MAH units, major roads, fire stations, hospitals, police stations, schools, colleges, water courses, etc. would be available in the police control rooms and civic fire stations to facilitate prompt and correct emergency response action (Refer Annexure - 7).
- SCBA Sets
- Communication equipment
- List of Experts having expertise in handling emergencies arising out of different chemicals used or transported through the area as given in Annexure - 19 and their contact details

C5. SAFETY OF RESPONSE PERSONNEL

C5.1 Considerations

- At the incident site the IC will take action to identify the hazardous materials, establish one or more control zones to manage entry and exit of personnel from the zones of concern and will define the decontamination procedures.
- Control of zone operations will be specified and managed by the IC or his Alternate. Safety of personnel will be most important throughout the incident.
- Action to contain the incident and prevent its escalation is a major effort required for the protection of both citizens and the response personnel.
- Control zone considerations will include concern for both toxicity and fire/explosion. All response personnel entering and exiting the hot control zone will be controlled and monitored by the personnel assigned by the IC
- Response personnel should avoid contact with all hazardous substances. Decontamination procedure may be placed in effect at the control zone check-points, depending on the toxicity characteristics of the materials involved in the incident
- The PPE used should be appropriate to the characteristics of the hazardous material involved in the incident. It may include fully-encapsulating chemical-resistant suit, breathing apparatus, gloves, boots, safety helmet, etc. The response personnel must be trained in the use of PPE, including self-contained breathing apparatus (SCBA)

C5.2 Zone Operations

Upon declaration of a hazardous material incident, three zones surrounding the incident, viz. "Hot Zone" "Warm Zone" and "Cool Zone" need to be established and clearly marked (Refer Annexure-17)

I) Hot Zone The zone closest to the incident Shape and size of the hot zone will depend upon the characteristics of the hazardous material and the meteorological conditions.

II) Warm Zone: The zone around the hot zone and is also known as the contamination reduction zone. Its shape and size will be established by the leader of the Team but it will be at least 50 metre wider than the hot zone.

III) Cool Zone: The zone around the Warm Zone and farthest from the Incident.

C5.3 Entry Operations

- There will be two entry points to the "Warm Zone", one from the "Hot Zone" and the other from the "Cool Zone". The entry and exit of response personnel should be controlled and monitored.
- The number of on-site personnel should be kept to a minimum, but consistent with the operations.
- All entry team personnel should be briefed before entry into hot and warm zone.
- No body would enter the "hot zone" alone.

- There would always be a break-up team of at least two persons in the same level of protection as the entry team waiting at the entrance to the hot zone
- Entry check-list would be used to control and monitor.
- All members of the entry team and the back-up team would be constantly in contact with each other either by hand signals or intrinsically safe walkie-talkie sets
- There would be mutually-understood danger signal for immediate evacuation of the area
- Wind direction would always be kept in mind.

C6 WARNING SYSTEMS AND EMERGENCY PUBLIC NOTIFICATION

C6.1 Methods for alerting the public

DM would arrange to alert the public by following methods :

i) Siren System

ii) Public Address System

iii) Local Cable TV Network

- **Siren System**

Sirens would be used for warning both the public and the response agencies.

➢ **Siren Codes**

- Altering the public of an Off-Site Emergency. The sound would be a high pitch wailing sound for a total duration of 60 seconds.

- Declaration of "All-Clear": Message of Termination of an emergency and that the normalcy has reached would be conveyed by sound of long continuous note for 30 seconds duration.

➢ **Location**

- Siren system would be located at :

i) Haldia Fire Station and
ii) Police Control Room

➢ **Responsibility for actuation**

The siren would be actuated by Fire Station and Police Control Room after receiving verbal instruction from DM/ADM.

➢ **Testing of the Siren System**

Functioning of the siren system would be tested in the presence of the personnel of the fire station for both the above-mentioned types of sounds on the days as mentioned.

Every Monday at 9.00 a.m.

The DM would arrange due publicity of the information about testing of the siren systems so that the public is warned but does not become panicky after hearing the siren on specified date and time

- **Warning through a vehicle-mounted public address system**

➢ **Methodology**

Information would be simultaneously passed in Bengali through the public address

system mounted on vehicles such as auto-rickshaws, jeep, etc.

- **Responsibility for alerting the public:**
  The Haldia Police Station would arrange the public address system mounted on the vehicles for alerting the public. At the time of the emergency situation, the Police would identify vehicles and manpower to make the necessary standardised announcements. DM/ADM would select such announcements.

C6.2 **Messages**

- **Standard Messages**

Give fundamental information about the incident and urge the public saying -
'Please remain calm, stay off the phone and await further information & instructions."
In case of evacuation of schools, Message describing the school (s) evacuated and place of its evacuation so that the parents will know where their children are.

OR

"Please do not leave your houses but take shelter in or in the safer house nearby'.
Take following precautions to protect yourselves-

The standard messages would be developed in consultation with DM/ADM and related [illegible]

- Essential Data to be passed on to the public though the messages.

Health Hazards & precautions for personal protection against identified toxic chemicals

Evacuation routes

Shelters

Hospitals to be used

C7 PUBLIC INFORMATION

The DM nominates **District Information & Cultural Officer, Tamluk, Purba Medinipur** as the Public Information Officer (PIO). In his absence **Sub-Divisional Information & Cultural Officer, Durgachak, Haldia**, would work as the PIO. Their contact details are given below:

PIO	03228-266113
Alternate PIO	03224-274318

PIO is a competent person as the Spokesperson authorised to give relevant information about the off-site emergency to the public and media (Newspapers, radio, TV). On receiving the information about the HAZMAT Incident causing the emergency, the PIO would report to the ECC and decide the location in consultation with the DM/ADM for the media to assemble. The PIO would keep in mind the personal safety of media personnel in all the arrangements. Rumour control will be addressed by the PIO in all his expressions. It is important to provide accurate information to the public and the media in order to prevent panic. Some citizens

2R

may want to know what is happening, while others may want to know what they should do to protect themselves and the community. These would be addressed by the PIO.

Because the information to the public would be needed quickly, the radio and television would be more important than the newspapers in most hazardous material release incidents. However, the newspaper coverage (or articles) can provide the detailed information on the incident to enhance the public understanding of the hazardous incident, procedure for containment and clean-up, etc.

C8 PERSONAL PROTECTION OF CITIZENS

C8.1 Methods

The citizens may be protected either by -
Shelter in-place or
Evacuation

The decision in this regard would be taken jointly by the DM, Chief Inspector of Factories, Fire Officer, Suptd. of Police (SP) and any other persons the DM thinks fit.

- **Shelter in-Place**

If advised to remain indoors, the citizens would close all doors and windows and seal any gap with a wet cloth and as an additional safety measure, breathe through a wet napkin (by covering their mouth and nose). They should be alert for any announcement by local authorities on the P.A. system, radio or TV.

The following public places have been identified for the public to have in-place shelter if their own houses are not safe enough. If evacuation is required, people would assemble at these places. The SP and his team would be responsible for organising evacuation.

Sheltering Places and Assembly Points

Sl. No	Name	Address	Contact Numbers
1.	Haldia Govt.Spon.X Class School	Basudebpore. Purba Medinipur.	03224-274891
2.	Basudebpore Kanyamilan Vidyabhavan	Khanjanchak, Purba Medinipur	03224-272845
3.	Haldia High School	Durgachak, Purba Medinipur	03224-275032
4.	Haldia Punarbasan Vidyaniketan	Durgachak Colony, Purba Medinipur	03224-272569
5.	Paranchak Sikhaniketan	Khanjanchak, Purba Medinipur	03224-273175
6.	I.T.I	Durgachak, Purba Medinipur	03224-274220
7.	Haldia Institute of Technology	City Centre, Purba Medinipur	03224-253062
8.	Barghasipur High School	Barghasipur, Purba Medinipur	03224-255111
9.	Haldia Govt.College	Debhog, Purba Medinipur	03224-255058
10.	College of Paramedical Science	Jay Hanuman Building, Deghasipur, Purba Medinipur	03224-255587

11.	Haldia Govt.Spon. Vivekananda Vidyabhavan	Ranichak,Haldia, Purba Medinipur	03224-252535
12.	Shyama Charan Milan Vidyapity	Bhawanipur, Purba Medinipur	03224-252627
13.	Anantapur Deshapran Jatiya Vidyamandir	Sutahata, Purba Medinipur	03224-281151
14.	Labanya Prabha Balika Vidyalaya	Sutahata, Purba Medinipur	03224-281328
15.	Vivekananda Mission Mahavidyalaya	Viveknagar, Chaitanyapore, Purba Medinipur	03224-286223
16.	Bajitpur Saradamoni Balika Vidyalaya	Bajitpur, Chaitanyapur, Purba Medinipur	03224-266224
17.	Bhupati Nagar Trilochan High School	Chaitanyapur, Purba Medinipur	03224-286251
18.	Simulberia Jogendra Vidyapith High School	Raghurampur, Chaitanyapur, Purba Medinipur	03224-286897
19.	St.Xavier's High School	Haldia Township, Purba Medinipur	03224-263251
20	Kendriya Vidyalaya	Haldia Township, Purba Medinipur	03224-263339
21.	Dr.Meghnath Saha Institute of Technology	City Centre, Haldia	03224-253064
22.	Poura Pathbhavan	City Centre, Haldia	03224-266999

The responsibility has been placed on Regional Transport Office, Haldia to arrange and provide vehicles for evacuation. For this purpose help of West Bengal State Transport Corporation – Haldia Bus Depot and Industry is to be taken. If additional vehicles are required for evacuation of the public, vehicles from private transporters should be used.

The details regarding types and numbers of vehicles available with transporters are given in Annexure- 12

Evacuation Procedure:

- Evacuation would be done by means of any vehicle available to the identified Shelters.
- The shelters would be decided with reference to wind direction.
- The evacuees will be taken to these pre decided shelters.
- The evacuees would be kept at the shelters till the all-clear siren would blown.
- The arrangements for water, food, medical treatment, etc. would be made at these shelters by civil supplies department of Govt of West Bengal under instruction from DM.
- Business organisation and industries located in the affected area are to co-ordinate their own in-plant evacuation procedures in accordance with their own on-site emergency plan.
- The help of voluntary organisation would be taken to manage the shelters where the evacuees would be temporarily transferred.

8.2 Other Public Protection Strategies

The West Bengal Pollution Control Board would immediately test whether the water in the

water courses, soil or sewerage systems is contaminated or not. If yes, they would immediately inform to the DM who would initiate the necessary action as under.

(1) Relocation: If a hazardous material incidents contaminates water, soil or air (or all), posing threat to people, the people would be evacuated till it becomes safe to return on the advice of the West Bengal Pollution Control Board.

(2) Water Supply: If the water supply system gets contaminated with any hazardous material, public would be warned and alternative arrangements would be made for supplying drinking water by the Haldia Municipality/Haldia Development Authority.

(3) Sewer/Sewage System: If a hazardous substance enters the sewer/sewage system, it can cause serious and long-term damage to streams, sewers, and treatment plants as well as to the environment. In such a case, diversion of sewage system may be considered by the Haldia Municipality/Haldia Development Authority.

C9 HUMAN SERVICES

Human services would be required to alleviate victim suffering, the degree of which would depend upon scale of the incident. Information about the social organizations who have agreed to provide the necessary human services as listed in Annexure – 12.

The services to be provided would include - welfare inquiries, shelter, food, clothing, emergency care, information, animal protection, counselling, canteen service, etc.

C10 PUBLIC WORKS

In the event of spillage of hazardous material, Public Works Department (PWD) under the instructions of the DM, would assist the operations involved to contain the spillage. It should provide equipment and manpower to build dykes, dams or other means of containment. All persons involved in the containment work would use the required PPE.

All contracted personal employed for the containment work should be briefed in a safe place near the site prior to their participation in the emergency response. Briefing would cover the hazards involved and the PPE to be used while performing their work. All health and safety precautions provided to the emergency response staff will also apply to contractor personnel.

If the water supply or sewer system is likely to be contaminated or gets contaminated, assistance from the Water Works Department, waste treatment section of the sewerage department and the West Bengal Pollution Control Board should be sought.

The PWD, Water Works, waste treatment section and all other personnel involved should be familiar with the containment and clean-up procedures and the precautions to be taken while carrying out the containment job (refer Section D of this document).

C11 ONGOING INCIDENT ASSESSMENT

As soon incident takes place, it is crucial to monitor the release and assess its impact, both on-site and off-site. A detailed record of all sampling results should be obtained by and maintained in the ECC. The West Bengal Pollution Control Board (WBPCB) would do the impact assessment in co-operation with the industries. The DM/ADM, Police and the State Health Department would be kept informed of the situation by the WBPCB. If necessary, the

water works and sewerage authorities should also be informed.

The decision about the safety of the emergency responders, protection of citizens (by indoor shelter or evacuation), supply of food and water, etc. will depend upon an accurate assessment of likely consequences of the leak, spill/release of the hazardous material. Similarly, the decision about containment and clean-up will depend upon collecting the data.

C12 LIAISON WITH MEDIA AND OTHER AGENCIES

- Entry of media persons to the incident site would be specifically authorised by the Police.
- As mentioned under the point No. C 7, the PIO would take care of this function with assistance of persons as identified by the DM or the PIO.
- News release: If the emergency attracts the attention of media, or if the notification of citizens through the media is warranted, the DM will approve any or all statements prepared for release to the media and the PIO will issue the same on behalf of DM.

C13. RESOURCE MANAGEMENT

Annexures - 23 & 24 provide lists of fire equipment, fire tenders and communication equipment respectively. Annexures 9, 10, 12, 20, 24 and 25 provides availability of resources

D. CONTAINMENT AND CLEAN-UP

D1. RESPONSIBILITY FOR SPILL CONTAINMENT AND CLEAN-UP

- Responsibility for selecting and implementing appropriate counter - measures is on the respective industry.
- The concerned industrial unit is responsible for all clean up counter measures. It with the approval of the WBPCB, would select a disposal site and temporary storage.
- Initial assessment of the incident is the responsibility of the concerned industrial unit. It should provide timely & accurate assessment of each situation.
- Treatment of contaminated soil and sediments will be the responsibility of industrial unit. When feasible, contaminated soil and sediments will be treated on site.

D2. METHODOLOGY

- The concerned industrial unit would ensure use of appropriate containment/disposal techniques.
- The WMC in consultation with DM/ADM may secure private contractors for displacement techniques viz. Hydraulic and mechanical dredging, Excavating, Skimming, Pumping Dispersion/ dilution, Vacuuming etc.
- Treatment of spilled hazardous substances can either be physical, chemical or biological. Treatment operations are the responsibility of the concerned industrial unit while monitoring would be by the WBPCB.

D3. RESTORATION

- WBPCB, the State and the Central Govt authorities will be in charge of restoration.
- Off-site transportation or storage, treatment, and safe disposal may be provided in cases recommended by the State Pollution Control Board

D4 RESOURCES FOR CLEAN-UP AND DISPOSAL

After the emergency is over, clean-up of the affected area is the next step. Arrange for the required material, equipment (including PPE) and personnel.

D4.1 Clean-up/disposal contractors and services

Contractors, services they offer and their contact details are enclosed in ANNEXURE 25.

D4.2 Clean-up material and equipment

Before starting the clean-up operation, seek the advice of the technical experts.

E. DOCUMENTATION AND INVESTIGATIVE FOLLOW-UP

The key response personnel should maintain an accurate record of all their activities Actual response cost should also be documented in order to facilitate the recovery of cost.

It is also important to identify who is responsible for the post-incident investigation to promptly discover the exact circumstances and the underlying cause of the disaster. DM would constitute a committee under his chairmanship for investigation. The investigation team would include representatives of:

- Factory Inspectorate - Member Secretary
- State Fire Department
- Controller of Explosives
- WBPCB
- Police
- Industry
- Community

The investigation team would prepare a report, summarizing the incident, including the immediate and underlying causes, incident critique, damages, expenditures, conclusions and recommendations

F. PROCEDURE FOR TESTING AND UPDATING THE PLAN

F1 TESTING THE PLAN

Testing (exercises & drills) the Off-Site Emergency Plan is the statutory responsibility of the HLCG. It can accomplish this by constituting a Task Force to undertake the testing. It should schedule, design, conduct and evaluate these testing to determine whether the plan procedures are effective in practice and to suggest reveal the improved ways of responding to an actual emergency. The Task Force would include representatives of:

- Factory Inspectorate- Member Secretary
- MAH units-Joint Secretary
- Haldia Fire Station
- Haldia Police Station
- Civil Defence Chief
- West Bengal Pollution Control Board
- Health Officer
- Regional Transport Officer (RTO)
- Any other person(s) to be nominated by the DM

F2 ORIENTATION SEMINARS:

The orientation seminar is an activity for familiarization with the Plan and specifically with their respective roles & responsibilities, procedures, and facilities. They should be held prior to implementation of this Plan and subsequently when major changes in it take place.

F3 TESTING METHODOLOGIES

i) Table-Top Exercise (TTE) :

Purpose of a TTE is for the participants to practise the problem solving and to resolve questions of co-ordination and assignment of responsibilities. It is a verbal walk through of response actions and is best suited to ensure perfection in each element of the plan before full scale drill is held. It can be held in a room with selected participants.

ii) Functional Exercise:

It is to test functional operations, operating procedures and skilled response functions

iii) Full-Scale Drill:

This is done by simulating an incident with involvement of all response agencies and technical experts. At least two Observers should be nominated to record all actions

and response time besides those at strategic and critical points. Immediately after the drill, all responders should meet to have a critical review of the drill and bring out any shortcomings in the plan, identify mistakes by the responders or receive suggestions.

F4 EXERCISE CYCLE

It is a calendar of events, reflecting a series of exercises/drills that helps in keeping all emergency responders in a state of full preparedness. It should be updated regularly (at least once in a quarter) The basis for preparation of the calendar of events is given in the table below:

Exercise Type	Purpose	Participants	Periodicity
Table-Top	Review Plan Co-ordination	To be decided as per the scenario	Monthly
Functional	Simulated	Police, Civil Defence, Transporters, NGOs.	Quarterly
Full-Scale	Simulated	All response agencies and technical experts	Half yearly

To achieve this aim, it is essential to have a creative programme or schedule of exercises/drills for all credible incident scenarios. Keeping this aim in mind, a time table for various rehearsals or exercises should be prepared and followed.

F5 DE-BRIEFING OF THE EXERCISES/DRILLS

Each exercise/drill would be immediately followed by a de-briefing meeting with all the participants and the observers to have a critical review and bring out any shortcomings in the plan, identify mistakes by the responders or receive suggestions.

F6 UPDATING OF THE OFF-SITE EMERGENCY PLAN

The off-site emergency plan would be reviewed by the LCG once a year (say 1st/2nd week of January) and the accepted recommendations or suggestions from the records of the de-briefing meetings should be incorporated in the plan and the amended and authorized copy of the changes in the plan should be issued to all the controlled copy holders and a record of the same maintained (as per Annexures-15 and 16).

G. SUMMARY OF HAZARD ANALYSIS

In Haldia there are 17 MAH industrial units handling 80 hazardous chemicals in which 27 (given in Annexure- 3) exceed threshold quantity handled in industrial units as specified in the MSIHC Rules.

The hazardous chemicals those have off-site impact are Ammonia (Anhydrous), Chlorine which are toxic and Hydrocarbons having fire/explosion hazard.

Summary of Hazard Analysis provided by the MAH units are enclosed as Annexure

H. REFERENCES

1. Hazardous Materials Emergency Planning Guide (NRT-1), published by National Response Team (consisting of 16 Federal agencies), Environmental Protection Agency (EPA), USA 2001.

2. The State and Local Guide 101: Guide for All-Hazard Emergency Operations Planning, published by Federal Emergency Management Agency (FEMA), USA 1996.

3. Hazardous Materials Emergency Response Plan of Hamilton County, Ohio, USA, published by the Local Emergency Planning Committee (LEPC): 1991.

4. The Off-site Disaster Management Plan for Navi Mumbai Area, published by Local Crisis Group, Navi Mumbai: 2000.

5. APELL Handbook published by the United Nations Environment Programme

6. Following Statutes :

   a. The Factories Act, 1948 and the West Bengal Factories Rules, 1950
   b. The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
   c. The Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996

I . SUGGESTED MEASURES

I 1. Short Term Measures

i) **Haldia Fire Station**

a) Intensive Training of the Fire Personnel in handling chemical emergencies including use of PPE
b) Providing Personal Protective, Communication and Fire Equipment
c) Reconditioning of existing Fire tenders
d) Review Infra-structural Manpower – available and required
e) Repairing/Strengthening of the Fire Station Building

ii) HPL Link road is to be maintained in good condition.

iii) Initial emergency drill to test the Plan to be conducted after the promulgation of the Plan.

iv) Improve condition of Approach roads to the industrial units.

v) Equip Emergency Control Centre in ADM's office and Police Control Room.

I 2. Long Term Measures

i) There are 3 unmanned railway crossings and a huge marshalling yard. Proper approach road/flyover bridge to be developed.

ii) Haldia area falls under seismic zone-III. Hence, Emergency Control Centre, Nodal Hospital(s), Sheltering Places should be inspected for structural stability due to seismic effect. If found weak, they could be retrofitted accordingly.

iii) An Emergency Burn Center to be set up.

ABBREVIATIONS USED

APELL	Awareness and Preparedness for Emergencies at Local Level
CAPE (Basic)	Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1995
CCG	Central Crisis Group
CEO	Chief Executive Officer
CIR	Community Information Representative
CMOH	Chief Medical Officer of Health
DCG	District Crisis Group
DEA	District Emergency Authority
DM	District Magistrate
ECC	Emergency Control Centre
Hazmat	Hazardous Material
HDA	Haldia Development Authority
HQ	Head Quarter
IC	Incident Commander
ICP	Incident Command Post
LCG	Local Crisis Group
MAH	Major Accident Hazard
MARG	Mutual Aid and Response Group
MCLS	Maximum Credible Loss Scenario
MSDS	Material Safety Data Sheet
MSIHC	Manufacture, Storage and Import of Hazardous Chemicals
NAC	National APELL Centre
NGO	Non-Governmental Organization
NRT	National Response Team
NSC	National Safety Council
PA System	Public Address System
PIO	Public Information Officer
PPE	Personal Protective Equipment
PRO	Public Relations Officer
PWD	Public Works Department
RTO	Regional Transport Office
SCBA	Self-contained Breathing Apparatus
SEC	Site Emergency Controller
SMPV(U)	The Static and Mobile Pressure Vessels (Unfired) Rules, 1983
SP	Superintendent of Police
WBPCB	West Bengal Pollution Control Board
WMC	Works Main Controller
Tremcard	Transport Emergency Card
TV	Television

GLOSSARY OF TERMS USED

Hazard: Any situation that has the potential for causing injury to life, or susceptible property and environment

Vulnerability: The susceptibility of life, property, and the environment to injury or damage if a hazard manifests its potential

Risk: The probability that injury to life, or damage to property and the environment will occur

HALDIA OFF-SITE EMERGENCY PLAN

ANNEXURES

(24.03. 05)

ANNEXURES

ANNEXURE-1

Normal Attendance and contact information of MAH Units.

Normal Attendance (Including Contract Persons)					Names & Contact Details of Works Main Controller (WMC1) and his alternate (WMC2)				
I	II	III	Gen	Total	Name & Designation	Telephone Nos. Office	Fax	Mobile	Resi.
1. Bharat Petroleum Corporation Ltd, Haldia Coastal Installation; Patikhali, P.O.Durgachak, Dist Purba Medinipur, West Bengal-721602									
-	-	-	60	60	WMC1- Mr.Abhijit Chanda, Mgr. Installation	03224-251103	03224-253119	9434319991	03224-263174
					WMC2- Mr.Samar Sanyal, Dy. Manager Ops.	03224-252216	03224-253119	9434196176	03224-265027
2. Consolidated Fibres and Chemicals Ltd.,Industrial Zone (South East) Haldia, Durgachak, Dist. Purba Medinipur, West Bengal-721602									
78	78	66	106	328	WMC1- Mr SP Gupta, Executive Director	03224-252490/252112	03224-252674	9332312114 9434040682	03224-263231
					WMC2- Mr. K.Hussain, GM-Production	03224-252490/252112	03224-252674	9332312106	03224-274239
3. Exide Industries Limited,PO-Durgachak,Haldia,Dist-Purba Medinipur, West Bengal-721602									
206	194	74	267	741	WMC1- Mr.Sourav Ghosh, Chief Operating Manager	03224-252256	03224-252145	9434050688	03224-263106/262395
					WMC2- Mr.A. Bose, Head-Material Control	03224-252296	03224-252145	9434012642	03224-263110
4 Haldia Petrochemicals Limited, Haldia,Dist-Purba Medinipur, West Bengal-721602									
					WMC1-		03224-272755		
					WMC2-		03224-272755		
5 Hindustan Petroleum Corporation Limited-Haldia Terminal, Brindabanchak, PO-Durgachak, Haldia, Dist.- Purba Medinipur, West Bengal-721602									
					WMC1- Mr. S.Ray		03224-252239	-	
-	-	-	48	48	WMC2- Mr.T.K.Roy		03224-252239	-	

Normal Attendance (Including Contract Persons)					Names & Contact Details of Works Main Controller (WMC1) and his alternate (WMC2)				
I	II	III	Gen	Total	Name & Designation	Telephone Nos. Office	Fax	Mobile	Resi
5. IBP Co. Limited-Haldia Terminal, Vill-Radhamadhavchak,P.O.-Khanjanchak,Haldia,Dist-Purba Medinipur,West Bengal-721602									
					WMC1- Alok Kr. Das, Terminal Manager	03224-273413	03224-273412		03224-
			20	36	WMC2- Cinmoy Kr. Patra, Dy.Mgr.(Ops)	03224-276115	03224-273412		03224-275171
7. Indian Oil Petronas Limited, LPG Import/Export Terminal, Kasberia, PO-Khanjanchak, Haldia, Dist-Purba Medinipur, West Bengal-721602									
50	40	15	70	175	**WMC1-** Mr.Amalees Datta, CTM	03224-275797	03224-274949	9434024803	03224
					WMC2- Mr.S.Sridhar	03224-275794	03224-274949	9434050275	03224-267467
9. IOCL Haldia Barauni Crude Oil Pipe Lines, Kassboria, Haldia,Dist-Purba Medinipur, West Bengal-721602									
12	12	12	90	126	**WMC1-** A.Bhattacharya, Sr.Operation Manager	03224-275157	03224-274025	9434024925	03224-
					WMC2- Chinmoy Ghosh, Sr.Maintainance Manager	03224-275014	03224-274025		03224-
9. IOCL Haldia Refinery, P.O.Haldia Oil Refinery, Dist-Purba Medinipur, West Bengal-721606									
338	338	329	975	1980	**WMC1-** Mr T.K.Basak, DGM (TS)	03224-252267	03224-252141		03224
					WMC2- Mr.H.Dutta, DGM (HR)	03224-252353	03224-252141		03224-253227
10. IOCL-Marketing Division, Eastern Region, Haldia Installation, Dist-Purba Medinipur, West Bengal-721602									
				125	**WMC1-** S.P.Babu, SRC	03224-252668	03224-252141/ 252242		03224-263223
					WMC2- Mr.S.Yadav, Manager (RC)		03224-252141/ 252242		
11. MCC PTA India Corp. Pvt. Ltd, Vill & PO-Bhuniarachak,Via Sutahata,Haldia,Dist-Purba Medinipur,West Bengal-721635									
125	125	73	205	528	**WMC1-** Mr Y.Kasai, Dir.(Production)	03224-264200	03224-275574/ 272015		03224
					WMC2- Mr.K.Nomura, Exe.Vice President-Engineering	03224-264300	03224-275574/ 272015		03224

Normal Attendance (Including Contract Persons)					Names & Contact Details of Works Main Controller (WMC1) and his alternate (WMC2)				
I	II	III	Gen	Total	Name & Designation	Telephone Nos.			
						Office	Fax	Mobile	Resi.
12. *Reliance Industries Limited, Multipurpose Chemical Storage Terminal, H.P.L. Link Road,PO-Debhog,,Dist-Purba Midinapore, West Bengal-721602*									
				30	**WMC1-** Mr. Gurpreet Saroa Terminal Mgr.	03224-305031	03224-305034	09332313656	03224-309237
					WMC2- Mr.Subhendu Mohapatra Maintenance Engineer	03224-305030	03224-305034	09333759116	-
13.*Sanjana Cryogenic Storages Limited,River Side Ring Road Durgachak,Haldia,WestBengal-721602*									
6	6	5	11	30	WMC1		03224-253725		
					WMC2		03224-253725		
14. *Shaw Wallace Agro Chemicals Limited,P.O.-Durgachak,Dist.-Purba Medinipur,West Bengal-721602*									
					WMC1		03224-252639		
					WMC2		03224-252639		
15 *Tata Chemicals Limited,P.O.-Durgachak,Haldia,Dist.-Purba Medinapur,West Bengal-721602*									
150	150	150	500	950	WMC1- Amin Alvi Mr.~~K.M.Chauhan~~, Head-Engineering	03224-251002	03224-252223	~~9434021168~~ 9233311520	
					WMC2- Mr.Ashok Si.	03224-251023	03224-252223	~~9434060846~~ 9434060902	
16. *United Storage and Tank Terminals Limited, Opposite BPCL Terminal, Bathikali, Dist.-Purba Medinipur, West Bengal*									
			21	21	**WMC1-** M Khusnood Manager	03224-253788	03224-253787	9434042225	9832234637
					WMC2- Rajesh Kumar Sr. Engineer	03224-253788	03224-253787	9932280234	-
17 *Bharat Petroleum Corporation Limited- Tank Wagon Gantry*									
					WMC1-				
					WMC2-				

ANNEXURE - 2

MAH UNIT-WISE INVENTORY OF HAZARDOUS CHEMICALS

Sr No.	Name of the Industry	Name of Chemicals	Qty. Stored	Type of Storage
1.	Bharat Petroleum Corpn. Ltd., Haldia Coastal Installation	HSD	28000 KL	Cone roof (3 Nos.)
		SKO	6000 KL	Cone roof (2 Nos.)
		Naptha	26500 KL	Floating roof (3 Nos.)
		MS	13000 KL	Floating roof (2 Nos.)
		Fuel Oil	20000 KL	Cone roof (4 Nos.)
2	Bharat Petroleum Corpn. Tank Wagon Gantry	No information whatsoever has been received		
3.	Consolidated Fibres and Chemicals Ltd.	Acrylonitrile	2560 M^3	Over ground insulated SS Vessel (2 Nos.)
		Methyl Acrylate	200 M^3	Over ground insulated SS 304 Vessel
		Sodium Chlorate	25 T_o	Isolated in bags in an isolated storage
		Fuel Oil	600 M^3	Over ground insulated cylindrical vessel (2 Nos.)
		HSD	149 M^3	Over ground cylindrical vessel (1 No.)
		Ammonia	4 T_o	Refrigeration System
		Sodium Thiocyrate	9 MT	Stored in bags in an isolated storage
		Sulphuric Acid	2 MT	Stored in 50 Lit carboys. Kept in well ventilated room away from metal and organic.
		Nitric Acid	1 MT	Stored in 50 Lit carboys. Kept in well ventilated room
		Thioglycol	5 MT	Insulated cylindrical vessel (1 No.)
		Sodium Hydroxide	38 M^3	Cylindrical Vessel (1 No.)
		Hydrochloric Acid	50 M^3	Cylindrical Vessel (MSRL)
4.	Exide Industries Limited	HSD	40 KL	UGS Tank
		LPG	30 MT	3 Bullets
		Sulphuric Acid	60 MT	4 Storage Tanks
		Lead	400 MT	Open Yard

Sr. No	Name of the Industry	Name of Chemicals	Qty. Stored	Type of Storage
4.	Haldia Petrochemicals Ltd	Naphtha	2,100 KL	Floating Roof Tank
		Naphtha	1,70,940 KL	Floating Roof Tank
		Hexane	1,900 KL	IFRT
		Methanol	11.8 KL	Conical Roof Tank
		Pentane	1030 KL	Domed Roof Tank
		Cyclopentane	1030 KL	Domed Roof Tank
		RPG	2950 KL	Domed Roof Tank
		Benzene	8490 KL	IFRT
		HSD	80 KL	Conical Roof Tank
		CBFS	3560 KL	Conical Roof Tank
		BEU Feed Stock	2140 KL	IFRT
		Motor Spirit	1210 KL	Domed Roof Tank
		C6 Raffinate	1210 KL	Floating Roof Tank
		HPG	3650 KL	Domed Roof Tank
		NaOH(50% Caustic)	1060 KL	Conical Roof Tank
		H_2SO_4	260 KL	Conical Roof Tank
		Ethylene	8900 M^3	Sphere
		Propylene	6675 M^3	Sphere
		C4-Mix	3420 M^3	Sphere
		Butene-1	5340 M^3	Sphere
		LPG	1900 M^3	Sphere
		Butadiene	4655 M^3	Sphere
		C4 Raffinate	1830 M^3	Sphere
		Propane	160 M^3	Bullet
		Hydrogen	120 M^3	Bullets
5.	Hindustan Petroleum Corporation Ltd., Haldia Terminal	HSD	30,000 KL	Overhead Storage Tank (4 Nos)
		SKO	8,000 KL	Overhead Storage Tank (2 Nos)
		MS	6,000 KL	Overhead Storage Tank (4 Nos)
		FO	15,000 KL	Overhead Storage Tank (3 Nos)
7.	IBP Co. Ltd.	HSD	10,500 KL	2 Atmospheric Tanks (A.T.)
		SKO	7,000 KL	1 A.T.
8.	Indian Oil Petronas Ltd	LPG	300 MT	Bullet (2 Nos)
		Propane	1,200 MT	Bullet (2 Nos)
		Propane	16,139 MT	Refrigerated Storage Tank
		Butane	16,470 MT	Refrigerated Storage Tank
		Ethyl Mercaptan	0.8 m^3	Receiver
		Chlorine	1 KL	Cylinder
		Hydrochloric Acid	10 m^3	Tank
		Sodium Hydroxide	10 m^3	Tank
		Sulphuric Acid	6 m^3	Tank
9.	IOCL Haldia Barauni Crude Oil Pipelines	Crude Oil	4,80,000 KL	8 Floating Roof Tanks
		Diesel	20 KL	Bullet

Sr. No.	Name of the Industry	Name of Chemicals	Qty. Stored	Type of Storage
10.	IOCL Haldia Refinery	Ammonia	65 MT	Bullet
		Chlorine	.....	Cylinder
		Hydrogen	202.6 m^3	Bullet
		Methyl Ethyl Ketone	504 MT	Bullet
		Toulene	433 MT	Tank
		Sulphuric Acid	500 MT	Tank
		Crude Oil	6,29,570 KL	Tank
		LPG	3300 MT	TiS/Bullet
		Motor Spirit (MS)	34,500 KL	Tank
		Naphtha	44,500 KL	Tank
11.	IOCL Marketing Division	Motor Spirit and FGN	24732 KL	Tank
		HSD,HFHSD,ULHSD,SKO	163597 KL	Tank
		LDO/FO	12406 KL	Tank
		LPG	.....	.....
12.	MCC PTA India Corp. Pvt. Ltd.	Paraxylene	53,042 KL	Fixed Roof Tanks (4 Nos)
		Methanol	106 KL	Fixed Roof Tank
		Acetic Acid	1,500 L	Fixed Roof Tank
		Furnace Oil	4,000 KL	Fixed Roof Tanks (2 Nos)
		HSD	150 KL	Fixed Roof Tank
		Caustic Soda	150 KL	Fixed Roof Tank
		Sulphuric Acid	34 KL	Fixed Roof Tanks (2 Nos)
13.	Reliance Industries Limited, MCS Terminal	HSD1	34609 KL	External Floating Roof Tank(EFR), 02 Tanks
		HSD2	6580 KL	EFR, 02 Tanks
		MS1	6580 KL	EFR, 02 Tanks
		MS2	6580 KL	EFR, 02 Tanks
14.	Sanjana Cryogenic Storages Ltd.	Ammonia	10,000 MT	Double Walled Dome Roof Tank
		HSD	500Kl.	.....
		LPG	.....	.....
15.	Shaw Wallace Agro Chemicals Ltd.	Phosphorous Penta Sulfide	8 MT	Drum
		Ethanol	14 KL	MS Tank
		Caustic Flake	10 MT	HDPE Bag
		Methylene Bromide	10 MT	Barrel
		Chlorine	0.1 MT	Cylinder
		Toluene	10 KL	MS Tank(UGS)
		Sulphuric Acid	10 MT	MS Tank
		Ammonia	6.4 MT	Cylinder
		DMPAT	20 MT	Barrel
		Acetic Anhydride	10 MT	SS Tank (OGS)
		Dimethyl Sulphate	8.5 MT	Barrel
		DCE	10 MT	SS Tank (OGS)
		Solvent CIX	10 KL	MS Tank (UGS)
		Xylene	10 KL	MS Tank (UGS)
		Aromax	10 KL	MS Tank (UGS)
		DA	21 M^3	Cylinder
		Benzene	0.4 MT	Barrel
		Ethion	6 MT	HDPE Drum
		Acephate	10 MT	Drum
		Silica	5 MT	HDPE Bag

		Sodium Sulphate	0.5 MT	HDPE Bag
		Sodium Nitrite	0.5 MT	HDPE Bag
		Emulsifier	0.6 MT	Barrel
		Ethyl DTA	10 MT	HDPE Drums
		Lime	6 MT	HDPE Bag
		Hydrochloric Acid	8 MT	FRP Tank
16.	Tata Chemicals Ltd (Erstwhile Hind Lever Chemicals Ltd.)	Liquid Anhydrous Ammonia	1,500 T	Horton Sphere
		Sulphur	19,000 T	Open Yard
		Furnace Oil & HSD	600 KL	MS Tank (4 Nos.)
		Sulphuric Acid	2,200T	MS Tank (3 Nos.)
		Linear Alkyl Benzene	500 T	MS Tank (1 No.)
		Phosphoric Acid (54%)	28,400T	MS Rubber Lined (6 Nos)
		Phosphoric Acid (29%)	1000T	MS RL Tank (4 Nos)
		Caustic Soda (48%)	300 T	MS Tank
		Hydrochloric Acid	1 T	Carbouys
		Nitric Acid	1 T	Carbouys
		Hydrazine Hydrate	0.5 T	Carbouys
		Sodium Sulphide	20 T	Carbouys
		Sodium Nitrate	20 T	Cylinders
		Defoamer	40 T	Carbouys
		LPG	0.4 T	Cylinder
		Soda Ash	5000 T	Closed shed
17.	United Storage and Tank Terminals Ltd.	Py Gas	7690 KL	(2 Nos.)
		MS	10104 KL	(3 Nos.)
		P-Xylene	6281 KL	(2 Nos.)

****

ANNEXURE-3

Hazardous Chemicals and MAH Units handling them

Sl. No	Name of the Chemical	Industrial Units using the Chemical
1.	Acephate	1. Shaw Wallace Agro Chemicals Ltd.
2.	Acetic Acid *	1. MCC PTA India Corp. Pvt. Ltd
3.	Acetic Anhydride *	1. Shaw Wallace Agro Chemicals Ltd.
4	Acrylonitrile (AN) *	1. Consolidated Fibres and Chemicals Ltd
5.	Alky: Benzene (Linear)	1. Tata Chemicals Ltd.,
6.	Ammonia (Liquid Anhydrous) *	1. Tata Chemicals Ltd , 2. Shaw Wallace Agro Chemicals Ltd. 3. Consolidated Fibres and Chemicals Ltd. 4. Sanjana Cryogenic Storages Pvt 5. IOCL Haldia Refinery
7.	Aromax	1 Shaw Wallace Agro Chemicals Ltd.
8.	Benzene *	1 Shaw Wallace Agro Chemicals Ltd. 2. Haldia Petrochemicals Ltd.
9.	BEU Feed Stock	1. Haldia Petrochemicals Ltd
10.	Bitumen	1 IOCL Marketing Division
11.	Butane *	1. Indian Oil Petronas Ltd
12.	Buladiene	1. Haldia Petrochemicals Ltd.
13.	Butene-1	1. Haldia Petrochemicals Ltd.
14	C4-Mix	1. Haldia Petrochemicals Ltd
15.	C4 Raffinate	1. Haldia Petrochemicals Ltd
16.	C6 Raffinate	1. Haldia Petrochemicals Ltd
17.	Caustic Flake *	1. Shaw Wallace Agro Chemicals Ltd. 2. Tata Chemicals Ltd , 3. MCC PTA India Corp. Pvt. Ltd. 4. Consolidated Fibres and Chemicals Ltd 5. Haldia Petrochemicals Ltd.
18	CBFS	1. Haldia Petrochemicals Ltd
19.	Chlorine *	1. Shaw Wallace Agro Chemicals Ltd. 2 IOCL Haldia Refinery 3 Indian Oil Petronas Ltd.
20.	Crude Oil	1. IOCL Haldia Barauni Crude Oil Pipe lines 2 IOCL Haldia Refinery
21	Cyclopentane*	1. Haldia Petrochemicals Ltd.
22.	DA *	1. Shaw Wallace Agro Chemicals Ltd.
23.	DCE	1. Shaw Wallace Agro Chemicals Ltd
24.	Defoamer	1. Tata Chemicals Ltd
25.	Diesel Oil	1 IOCL Haldia Barauni Crude Oil Pipe lines
26.	Dimethyl Sulphate	1 Shaw Wallace Agro Chemicals Ltd.
27.	DMPAT	1. Shaw Wallace Agro Chemicals Ltd.
28.	Emulsifier	1. Shaw Wallace Agro Chemicals Ltd.
29.	Ethanol *	1. Shaw Wallace Agro Chemicals Ltd. 2 Exide Industries Limited

Sl. No	Name of the Chemical	Industrial Units using the Chemical	
30.	Ethion *	1.	Shaw Wallace Agro Chemicals Ltd.
31.	Ethyl DTA	1.	Shaw Wallace Agro Chemicals Ltd.
32.	Ethylene	1.	Haldia Petrochemicals Ltd.
33.	Ethyl Mercaptan	1.	Indian Oil Petronas Ltd.
34.	FGN	1.	IOCL Marketing Division
35.	Furnace Oil	1.	IOCL Marketing Division
		2.	Tata Chemicals Ltd.
		3.	MCC PTA India Corp. Pvt. Ltd
		4.	Consolidated Fibres and Chemicals Ltd.
		5.	Bharat Petroleum Corpn. Ltd.,
36.	Furfural	1.	IOCL Haldia Refinery
37.	Hexane *	1.	Haldia Petrochemicals Ltd.
38.	HFHSD	1.	IOCL Marketing Division
39.	HPG	1.	Haldia Petrochemicals Ltd.
40.	HSD	1.	Tata Chemicals Ltd.,
		2.	Exide Industries Limited
		3.	Sanjana Cryogenic Storages Ltd.
		4.	ISP Co. Ltd.
		5	Bharat Petroleum Corpn. Ltd.,
		6	Reliance Industries Ltd.,MCS Terminal
		7.	IOCL Marketing Division
		8	Haldia Petrochemicals Ltd.
		9.	Hindustan Petroleum Corporation Ltd., Haldia Terminal
		10.	Indian Oil Petronas Ltd.
		11	MCC PTA India Corp. Pvt Ltd.
		12.	Consolidated Fibres and Chemicals Ltd.
41.	Hydrazine Hydrate	1.	Tata Chemicals Ltd.
42.	Hydrochloric Acid *	1.	Tata Chemicals Ltd.,
		2.	Shaw Wallace Agro Chemicals Ltd.
		3.	Consolidated Fibres and Chemicals Ltd.
		4.	Exide Industries Limited
		5.	Indian Oil Petronas Ltd.
43.	Hydrogen *	1.	IOCL Haldia Refinery
		2.	Haldia Petrochemicals Ltd.
44.	Lead	1.	Exide Industries Ltd.
45.	LDO	1.	IOCL Marketing Division
46.	Linear Alkyl Benzene	1.	Tata Chemicals Ltd.
47.	LPG *	1.	Tata Chemicals Ltd.,
		2.	Exide Industries Limited
		3.	IOCL Haldia Refinery
		4.	IOCL Marketing Division
		5.	Indian Oil Petronas Ltd.
		6.	Sanjana Cryogenic Storages Ltd
		7.	Haldia Petrochemicals Ltd.
48.	Methanol *	1.	Haldia Petrochemicals Ltd.
		2.	MCC PTA India Corp. Pvt. Ltd.
49.	Methyl Acrylate (M-35)	1.	Consolidated Fibres and Chemicals Ltd.
50.	Methyl Ethyl Ketone (MEK)	1.	IOCL Haldia Refinery

Sl. No	Name of the Chemical	Industrial Units using the Chemical	
51.	Methylene Bromide	1.	Shaw Wallace Agro Chemicals Ltd.
52.	Motor Spirit (MS)	1.	IOCL Haldia Refinery
		2.	Reliance Industries Ltd.,MCS Terminal
		3.	IOCL Marketing Division
		4.	Haldia Petrochemicals Ltd.
		5.	Bharat Petroleum Corpn. Ltd.
		6.	United Storage and Tank Terminals Ltd
53.	Naphtha *	1.	IOCL Haldia Refinery
		2.	Haldia Petrochemicals Ltd.
		3.	Bharat Petroleum Corpn. Ltd.,
54.	Nitric Acid *	1.	Tata Chemicals Ltd.,
		2.	Consolidated Fibres and Chemicals Ltd
55.	N-Methyl Pyrrolidone	1.	IOCL Haldia Refinery
56.	Paraxylene	1.	MCC PTA India Corp. Pvt. Ltd.
		2.	United Storage and Tank Terminals Ltd.
57.	Pentane *	1.	Haldia Petrochemicals Ltd.
58.	Phosphoric Acid (54%) *	1.	Tata Chemicals Ltd ,
59.	Phosphoric Acid (29%) *	1.	Tata Chemicals Ltd.,
60.	Phosphorous Penta Sulfide	1.	Shaw Wallace Agro Chemicals Ltd.
61.	Propane	1.	Indian Oil Petronas Ltd
		2.	Haldia Petrochemicals Ltd.
62.	Propylene	1.	Haldia Petrochemicals Ltd.
63.	Py Gas	1.	United Storage and Tank Terminals Ltd
64.	RPG	1.	Haldia Petrochemicals Ltd
65.	Silica	1.	Shaw Wallace Agro Chemicals Ltd.
66.	SKO	1.	IBP Co. Ltd.
		2.	Bharat Petroleum Corpn Ltd., Haldia Coastal Installation
		3.	Reliance Haldia Marketing Terminal
			IOCL Marketing Division
		4.	Hindustan Petroleum Corporation Ltd., Haldia Terminal
67.	Soda Ash	1.	Tata Chemicals Ltd
68.	Sodium Chlorate *	1.	Consolidated Fibres and Chemicals Ltd.
69.	Sodium Hydroxide	1.	Consolidated Fibres and Chemicals Ltd.
		2.	Indian Oil Petronas Ltd.
70.	Sodium Hydroxide (50% Caustic)	1.	Haldia Petrochemicals Ltd.
71.	Sodium Nitrate	1.	Tata Chemicals Ltd.,
72.	Sodium Nitrite	1.	Shaw Wallace Agro Chemicals Ltd.
73.	Sodium Sulphate	1.	Shaw Wallace Agro Chemicals Ltd.
74.	Sodium Sulphide *	1.	Tata Chemicals Ltd.,
75.	Sodium Thiocyanate (PRS)	1.	Consolidated Fibres and Chemicals Ltd.
76.	Solvent CIX	1.	Shaw Wallace Agro Chemicals Ltd.
77.	Sulphur	1.	Tata Chemicals Ltd.,
78.	Sulphuric Acid *	1.	Tata Chemicals Ltd ,
		2.	Shaw Wallace Agro Chemicals Ltd.
		3.	Consolidated Fibres and Chemicals Ltd.
		4.	Exide Industries Limited
		5.	IOCL Haldia Refinery
		6.	Haldia Petrochemicals Ltd
		7.	MCC PTA India Corp. Pvt. Ltd.

Sl. No	Name of the Chemical	Industrial Units using the Chemical	
79.	Thioglycol (TG)	1.	Consolidated Fibres and Chemicals Ltd.
80	Toluene	1. 2.	Shaw Wallace Agro Chemicals Ltd. IOCL Haldia Refinery
81.	ULHSD	1.	IOCL Marketing Division
82.	Xylene	1.	Shaw Wallace Agro Chemicals Ltd

* Hazardous Chemicals as per schedule –I part II of MSIHC rules.

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Dangerous Properties of the Chemicals used and stored in the area

MATERIAL SAFETY DATA SHEET

1. CHEMICAL IDENTITY :

Chemical name : Hydrogen		**Chemical classification :** Inorganic Gas
Synonyms : Liquid Hydrogen, Para Hydrogen, Hydrogen (Compressed)	**Trade name**	
Formula : H_2	**CAS No. :** 1333-74--0	**U.N.No. :** 2015 / 2014
Regulated identification	**Codes/Labels :** Flammable Gas Class 2	**Hazchem Code :** 2_E
	Hazardous waste ID No : 17	

Hazardous ingredients	CAS No.	Hazardous ingredients	CAS No.
1. Hydrogen	1333-74--0	3.	
2.		4.	

2. PHYSICAL AND CHEMICAL DATA :

Boiling Range/point: -252.8°C	**Physical state:** Gas	**Appearance** Colourless
Melting/Freezing Pt: - 259.18°C	**Vapour pressure @35°C :** Not Pertinent	**Odour :** Odourless
Vapour Density (Air=1): 0.069	**Solubility in water @30°C:** Slightly Soluble	**Others**
Specific Gravity (Water=1): 0.089 gms / Litre	**PH :** Not Pertinent	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability : Yes	**LEL:** 4.1%	**Flash Point** °C	**Auto Ignition Temperature** °C 400.0
TDG Flammability: 2	**UEL:** 74.2%	**Flash Point** °C	**Hazardous combination products** Not Available
Explosion sensitivity to impact : Stable	**Explosion sensitivity to static electricity :** Explodes		

Hazardous Polymerisation : Will Not Occur

Combustible Liquid : No	**Explosive Material :** Yes	**Corrosive Material :** No
Flammable Material : Yes	**Oxidiser :** No	**Others**
Pyrophoric Material : No	**Organic Peroxide :** No	

4. REACTIVITY DATA

Chemical Stability : Stable

Incompatibility with other Material : Water. No chemical reaction with materials but low temperature causes most materials to become very brittle.

Reactivity : Violent reaction or ignition with air + catalysts (Platinum and similar metals containing oxygen or hydrogen), Bromine, Iodine, Dioxane + Nickel, Lithium, Nitrogen trifluoride, Nickel+Oxygen, Oxygen difluoride, Pd + Isopropyl alcohol

Hazardous Reaction Products : It forms sensitive mixtures with Bromine, Chlorine, Iodine heptafluoride, Chlorine dioxide, Dichlorine oxide, Dinitrogen oxide

5. HEALTH HAZARD DATA

Routes of Entry : Skin, Inhalation

Effects of Exposure/Symptoms: It is an inert, non-toxic gas. In high concentration acts as a simple asphyxiant. If atmosphere does not contain enough Oxygen, inhalation can cause dizziness, unconsciousness or even death.

Contact of liquid with eyes or skin causes freezing similar to burn.

Emergency Treatment

Inhalation – If victim is unconscious (due to oxygen deficiency), move him to fresh air area and apply resuscitation :

Eyes & Skin – Treat for frostbite, soak in luke-warm water. Seek medical aid.

TLV(ACGIH) : Asphyxiant	STEL : Not listed
Permissible Exposure Limit : Asphyxiant	Odour Threshold : Odourless ; LD_{50} : Not listed

NFPA Hazard Signals : Health : 0 Flammability : 4 Stability : 0 Reactivity: 0 Special :

[redacted]

6. PREVENTIVE MEASURES

Personal Protective Equipment : Avoid contact with liquid or gas. Provide safety goggles, face shield, insulated gloves long sleeved, trousers worn outside boots or over high-top shoes, self-contained breathing apparatus containing air (never use oxygen).

Handling & Storage Precautions : Store in a cool, fire proof, well ventilated area separated from other cylinders preferably in open air.

[redacted]

7. EMERGENCY AND FIRST AID MEASURES

FIRE	**FIRE EXTINGUISHING :** Stop flow of gas. Let fire burn under control
FIRE	**Special Procedures :** Keep the containers cool by spraying water if exposed to heat or flame
	Unusual Hazards : Flash back along gas trail may occur.
EXPOSURE	**First-Aid Measures : Inhalation –** If victim is unconscious (due to oxygen deficiency), move him to fresh air area and apply resuscitation.
	Eyes & Skin – Treat for frostbite, soak in luke-warm water. Seek medical aid.
	Antidotes/Dosages : Not available
SPILLS	**Steps to be taken :** Shut off leaks if without risk. Warn everybody-explosion hazard.
	Waste Disposal Method : To be burnt under control condition.

[redacted]

8. ADDITIONAL INFORMATION/REFERENCES :

Practically no toxicity, except that it is an asphyxiant. Highly dangerous fire and severe explosion hazard when exposed to heat, flame and oxidizers. Flammable or explosive when mixed with air, O_2, Cl_2. Vigorous exothermic reactions with Benzene + Raney Nickel catalysts, metals (like Strontium, Sodium, Potassium, Barium- above 300 °C) Ventilate at high points.

[redacted]

DISCLAIMER

[redacted]

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Source: On-Site Emergency Plan of M/S MCC PTA India Corp. Private Limited

MATERIAL SAFETY DATA SHEET (MSDS)

1. CHEMICAL IDENTITY :

Chemical name : Anhydrous Ammonia		Chemical classification	
Synonyms		Trade name: Anhydrous Ammonia	
Formula : NH_3	CAS No. : 7664-41-7	U.N.No. : 1005	
Shipping name			
Regulated identification	Codes/Labels	Hazchem No. :	
	Hazardous waste	ID No. :	

Hazardous Ingredients	CAS No.	Hazardous Ingredients	CAS No.
1.		3.	
2.		4.	

2. PHYSICAL AND CHEMICAL DATA :

Boiling point : - 33 °C	Physical state : Colourless, Compressed liquefied gas	Appearance:
Melting/Freezing Point:	Vapour pressure @25.7 °C : 10 atm mmHg	Odour : Pungent
Vapour Density (Air=1): 0.59 at 25 °C	Solubility in water @30°C : Very High	Others:
Specific Gravity (Water=1) : 0.771 at 0 °C	pH	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability Yes/No	LEL:16% vv in air	Flash Point °C	Auto Ignition Temperature: 651 °C
TDG Flammability	UEL:25% vv inair	Flash Point :Flammable Gas	Hazardous combination products
Explosion sensitivity to impact	Explosion sensitivity to static electricity		

Hazardous Polymerisation : Nil

4. REACTIVITY DATA

Chemical Stability : Stable

Incompatibility with other Material: It forms explosive compounds with Silver Dioxide & Mercury. Violent/explosive reaction with halogens. Ammonia attacks Copper, Zinc, and alloy containing Copper. exothermic reaction with water.

Reactivity:

Hazardous Reaction Products : Nil

5. HEALTH HAZARD DATA

Routes of Entry

Effects of Exposure/Symptoms :

1. Inhalation: Exposure to Ammonia vapours cause irritation to upper respiratory tract (> 100 ppm), lung irritation (500 ppm). It tends to attack wet parts of body preferently, due to high solubility at > 2000 ppm. It is fatal within 30 minutes or less.
2. Eye Contact: Ammonia vapour causes irritation to eyes at very low concentration. Liquid Ammonia will cause serious eye burns.
3. Skin Contact : Liquid Ammonia will cause burns on skin

Emergency Treatment

TLV : 25 ppm	STEL :
Permissible Exposure Limit ppm mg/m³ LD_{50}	Odour Threshold ppm mg/m³ LD_{50}
NFPA Hazard Signals : Health : Flammability :	Stability : Special:

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6 PREVENTIVE MEASURES

Personal Protective Equipment :

Respiratory Protection : Canister gas mask for concentration upto 3%. Self Contained Breathing Apparatus or Compressor air supplied air line mask for higher concentrations

Protective Gloves/Gum Boots: PVC/Rubber Hand-gloves

Eye Protection : Gas-tight goggles

Other Protective Equipment: Use full PVC Suit while attending Ammonia leak

Handling & Storage Precautions: No naked flame or hot work is allowed where Ammonia is stored, as it can form explosive mixture with air.

7. EMERGENCY AND FIRST AID MEASURES :

1. Inhalation : Move to uncontaminated area and inhale fresh air. In case of severe exposure and victim still breathing, Oxygen is administered by authorized person. Contact doctor.

2. Eye Contact : Flush with large amount of water for minimum 15 minutes. Immediately use eye fountain holding eyelids open. Consult doctor. Do not apply ointment unless prescribed.

3. Skin Contact : Remove contaminated clothing. Flush affected parts with large amount of water. If safety shower is available, get under it and then remove clothes. Do not apply cream on burns but cover with cloth. Contact doctor.

4. Ingestion : If victim is conscious, drink water. Do not induce vomiting. Contact doctor

FIRE	Fire Extinguishing Media : CO_2, Dry Powder, Water
FIRE	Special Procedures: Stop flow of gas/liquid, if possible. If container exposed to fire, keep cool by water spray.
	Unusual Hazards: Auto Ignition Temperature : 651 °C Fire hazard but in enclosed space risk of explosion increases. Ammonia forms explosive mixtures with compounds of silver of mercury.
EXPOSURE	First-Aid Measures:
	Antidotes/Dosages:
SPILLS	Steps to be taken (in case material is released or spilled) : Avoid contact. Stay upwind and/or in enclosed room. For attending a leak, use air supplied self-contained breathing set. Stop leak if possible. Water fog nozzle can be used to prevent Ammonia vapour from spreading. Do not spray water on a pool of liquid Ammonia as heat generates
	Waste Disposal Method will increase evaporation rate. For minor leaks, water spray can be used to contain it till leak is attended and for flushing away residue Ammonia. For major leaks follow 'Emergency Control Procedure' after alerting by blowing emergency siren.

8. ADDITIONAL INFORMATION/REFERENCES

Fire hazard. In an enclosed space risk of explosion increases. It forms explosive mixtures with compounds of Silver & Mercury.

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Source : On-Site Emergency Plan of M/S Tata Chemicals Limited(Erstwhile Hind Lever Chemicals Ltd)

MATERIAL SAFETY DATA SHEET

1. CHEMICAL IDENTITY :

Chemical name : Methanol		**Chemical classification**
Synonyms : Methyl Alcohol, Wood Alcohol, Wood Spirit, Colonial Spirit **Trade name:**		
Formula : CH_3OH	**CAS No. :** 67-56-1	**U.N.No. :** 1230
Shipping name : Methanol		
Regulated identification	**Codes/Labels :** Flammable Liquid, Class 3	**Hazchem No. :** 2PE
	Hazardous waste ID No. : 17	

Hazardous ingredients	CAS No.	Hazardous ingredients	CAS No.
1. Methyl Alcohol	67-56-1	3.	
2.		4.	

2. PHYSICAL AND CHEMICAL DATA :

Boiling Range/point: 64.5°C	**Physical state :** Liquid	**Appearance:** Colourless, Watery
Melting/Freezing Point: - 97.8 °C	**Vapour pressure @ 35°C :** 100 mmHg at 21.2 °C	**Odour:** Characteristic
Vapour Density (Air=1): 1.10	**Solubility in water @30°C :** Miscible	**Others** Miscible with Ethanol, Ether, Benzene, Ketones, & Other organic Solvents.
Specific Gravity (Water=1): 0.79 at 20 °C (Liquid)	**pH :** Neutral	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability Yes	**LEL:** 6%	**Flash Point** °C	**Flash Point** : 16.1 °C (OC)
TDG Flammability: 3	**UEL:** 36.5%	**Flash Point:** 12.2 °C (CC)	**Hazardous combustion products:** Fumes and smoke and irritating fumes
Explosion sensitivity to impact: Stable	**Explosion sensitivity to static electricity :** Vapours may be explosive		

Hazardous Polymerisation : Will not occur **Auto Ignition Temperature** 385 °C

Combustible Liquid: Yes	**Explosive Material :** No	**Corrosive Material :** No
Flammable Material : Yes	**Oxidiser :** No	**Others**
Pyrophoric Material : No	**Organic Peroxide :** No	

4. REACTIVITY DATA

Chemical Stability : Stable

Incompatibility with other Material : Strong Oxidisers, Berylium dihydride, Metals (K,Mg), Carbon Tetrachloride + Metals (Al, Mg, Zn), Dichloro methane, Oxidants

Reactivity : Violent reaction with alkyl aluminium salts, acetyl bromide, chloroform + NaOH, CrO_3, Nitric Acid, $HClO_2$, P_2O_3,

Hazardous Reaction Products: Not available

5. HEALTH HAZARD DATA

Routes of Entry: Inhalation, Ingestion, Eyes, Skin

Effects of Exposure/Symptoms: Exposure to vapours causes eye irritation, headache, fatigue, drowsiness, High concentration can produce central nervous system depression and optic nerve damage, 50,000 ppm will probably cause death in 1-2 hrs. is absorbed through skin Swallowing may cause death or eye damage.

Emergency Treatment:	
Inhalation: Remove the victim from exposed area & apply artificial respiration if breathing has stopped Ingestion: Induce vomiting, give 2 teaspoons of baking soda in a glass of water. Skin or Eyes : Flush with plenty of water for 15 minutes. Seek medical aid.	
TLV(ACGIH) : 200(Skin) ppm 260(Skin) mg/m^3	STEL ppm 310 (Skin) mg/m^3
Permissible Exposure Limit : 200 (Skin) ppm 260 (Skin) mg/m^3 LD_{50}	Odour Threshold : 100 ppm 130.9 mg/m^3 LD_{50}
NFPA Hazard Signals : Health: 1	Flammability: 3 Reactivity: 0 Special:

6. PREVENTIVE MEASURES

Personal Protective Equipment :	Avoid contact with liquid or vapours. Provide air supplied respirator. (Do not use organic canister mask). Wear boots, safety goggles, and rubber gloves. Provide eye wash and basin nearby.
Handling & Storage Precautions:	Store away from heat, ignition source, sparks. Keep away from heat, and flame.

7. EMERGENCY AND FIRST AID MEASURES

FIRE	Fire Extinguishing Media : CO_2, Dry chemical powder, Alcohol foam, Water moisture
FIRE	Special Procedures : Keep the containers cool by spraying water if exposed to heat.
	Unusual Hazards : Containers may explode in a fire.
EXPOSURE	First-Aid Measures : If the substance enters the eyes, immediately wash with plenty of water for 15 minutes. If skin is affected, remove the soaked clothes and wash the affected area with plenty of water and soap. If inhaled remove the victim to fresh air area. Seek medical aid immediately.
SPILLS	Antidotes/Dosages : Baking soda in a glass of water
	Steps to be taken : Shut off leaks if without risks. Drench with water.
	Waste Disposal Method : Seal all waste in vapour tight plastic bags for eventual disposal.

8. ADDITIONAL INFORMATION/REFERENCES

A human poison by ingestion, and skin contact. The main toxic effect is extended to the nervous system, particularly optic nerves and retina which may lead to permanent blindness. Once absorbed, it is slowly eliminated. Coma by severe exposure may last for 2-4 days. Persons with kidney & lung problems should avoid contact. Periodic medical check up is recommended. Dangerous fire hazard when exposed to heat and oxidizers.

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Source: On-Site Emergency Plan of M/s MCC PTA India Corp. Private Limited

A-1

MATERIAL SAFETY DATA SHEET

1. CHEMICAL IDENTITY :

Chemical name : Sulphur Dioxide		Chemical classification :	
Synonyms		Trade name : Sulphur Dioxide	
Formula : SO_2	CAS No. 1333-74-0	U.N.No.	
Shipping name :			
Regulated identification	Codes/Labels:	Hazchem No.	
	Hazardous waste ID No.	ID No. :	

Hazardous ingredients	CAS No.	Hazardous ingredients	CAS No.
1. Sulphur Dioxide	1333-74-0	3.	
2.		4.	

2. PHYSICAL AND CHEMICAL DATA :

Boiling Range/point: -10 °C	Physical state :	Appearance: Colourless Gas
Melting/Freezing Point : - 75.5 °C	Vapour pressure (mmHg) : 2538 mm at 21.1 °C	Odour: Pungent
Vapour Density at 0 °C : 2.264	Solubility in water :	Others:
Specific Gravity :	PH : Acidic	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability Yes/No	LEL %	Flash Point °C	Auto Ignition Temperature °C
TDG Flammability	UEL %	Flash Point : Not Flammable	Hazardous combination products
Explosion sensitivity to impact	Explosion sensitivity to static electricity		
Hazardous Polymerisation			

Combustible Liquid	Explosive Material	Corrosive Material
Flammable Material	Oxidiser	Others
Pyrophoric Material	Organic Peroxide	

4. REACTIVITY DATA

Chemical Stability: Not Pertinent

Incompatibility : In moist air / fog. SO_2 combines with water to form sulphurous acid and very slowly oxidised to sulphuric acid. Reacts with water or steam to produce toxic and corrosive fumes.

Hazardous Decomposition Products: Nil

Hazardous polymerisation : Nil

5. HEALTH HAZARD DATA

Routes of Entry

Effects of Exposure:

1. Eye Contact: Dangerous to eyes. Causes irritation and inflammation at concentration more than 20 ppm
2. Inhalation: 3 ppm noticible odour 6-12 ppm causes irritation of nose and throat, 50-100 max allowable limit for exposure below 1 Hour, 400-500 ppm immediately dangerous to life
3. Skin Contact: 1000 ppm is an irritant to moist areas of skin with few minutes of exposure.

TLV : 5 ppm in air	STEL
Permissible Exposure Limit ppm mg/m³ LD_{50}	Odour Threshold ppm mg/m³ LD_{50}
NFPA Hazard Signals : Health Flammability Stability Special	

6. PREVENTIVE MEASURES

Personal Protective Equipment :

Eye Protection: Gas tight goggles or face-mask

Respiratory Protection: Use Cannister type gas mask when exposed to low concentration. For high concentration, use Self Contained or Air supplied Breathing Apparatus.	
Other Protective Equipment: For low concentrations, a wetted nose mask can be used in emergency.	
Special Fire fighting procedures: Not pertinent	
Precautions in Handling & Storage: Not pertinent	

7. EMERGENCY AND FIRST AID MEASURES

FIRE	Special Procedures : Not pertinent
	Unusual Fire and Explosion Hazards: Not pertinent
EXPOSURE	First-Aid Measures: Inhalation: Move to fresh air Consult doctor if toxic symptoms exist. Eye Contact: Flush with large amount of water for minimum 15 min. Contact doctor if irritation persists Skin Contact: Remove contaminated clothing and flush effected area with water If irritation persists, consult doctor.
	Antidotes/Dosages:
SPILLS	Steps to be taken: Not pertinent
	Waste Disposal Method: Not pertinent

8. ADDITIONAL INFORMATION/REFERENCES

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Source: On-Site Emergency Plan of M/S Tata Chemicals Limited(Erstwhile Hind Lever Chemicals Ltd)

MATERIAL SAFETY DATA SHEET

1. CHEMICAL IDENTITY :

Chemical name : Sulphur Trioxide		**Chemical classification:**	
Synonyms		**Trade name :** Sulphur Trioxide	
Formula : SO_3	**CAS No.**	**U.N.No.**	
Shipping name:			
Regulated identification	**Codes/Labels:**	**Hazchem No**	
	Hazardous waste:	**ID No. :**	

Hazardous Ingredients	**CAS No.**	**Hazardous Ingredients**	**CAS No.**
1.		3.	
2.		4.	

2. PHYSICAL AND CHEMICAL DATA :

Boiling point: 44.07°C	**Physical state:**	**Appearance:** Colourless Gas
Melting/Freezing Point (°C): 16.83 °C	**Vapour pressure:** 100 at 10.5 °C mmHg	**Odour.**
Vapour Density: 2.76	**Solubility in water :**	**Others**
Specific Gravity (H_2O =1):	**pH : Acidic**	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability: Yes/No	**LEL** %	**Flash Point:** °C	**Auto Ignition Temperature:** °C	
TDG Flammability:	**UEL** %	**Flash Point:** Not combustible		**Hazardous combination products**
Explosion sensitivity to impact:	**Explosion sensitivity to static electricity:**			

Hazardous Polymerisation: Nil

Combustible Liquid:	**Explosive Material:**	**Corrosive Material:**
Flammable Material:	**Oxidiser:**	**Others:**
Pyrophoric Material:	**Organic Peroxide:**	

4. REACTIVITY DATA

Chemical Stability : Not pertinent

Incompatibility with other Material : Combines with moist air/fog to produce sulphuric acid.

Reactivity: Reacts with water to produce heat /Sulphuric Acid.

Hazardous Polymerisation: Nil

Hazardous Decomposition Products : Nil

5. HEALTH HAZARD DATA

Routes of Entry

Effects of Exposure/Symptoms:

(1) Eye Contact: Dangerous to eyes causes irritation and inflammation at concentration more than 2 ppm.

(2) Inhalation: 3 ppm noticeable odour, 6-12 ppm cause irritation of nose and throat. 50-100 max allowable limit for exposure below 1 hr. 400-500 ppm immediately dangerous to life.

(3) Skin contact: 10000 ppm IA an irritant to moist areas of skin with few minutes of exposure.

Emergency Treatment:

(1) Inhalation: Move to fresh air. Consult doctor if toxic symptoms exists

(2) Eye Contact: Flush with large amount of water for minimum 15 min, contact doctor IR irritation persist.

(3) Skin Contact: Remove contaminated clothing and flush effected area with water. If irritation persist consult doctor

TLV(ACGIH) : 5 ppm in air	STEL ppm
Permissible Exposure Limit ppm mg/m^3 LD_{50}	Odour Threshold ppm mg/m^3 LD_{50}
NFPA Hazard Signals : Health Flammability Stability Special	

6. PREVENTIVE MEASURES

Personal Protective Equipment: Protective Gloves / Gum boots, **Eye Protection:** Gas tight goggles or face-mask

Respiratory Protection: Use canister type gas mask when exposed to low concentration. For high concentration use self-contained or air supplied breathing apparatus.

Handling & Storage Precautions: Not pertinent

7. EMERGENCY AND FIRST AID MEASURES

FIRE	**FIRE EXTINGUISHING Media**
FIRE	**Special fire fighting Procedures:** Not pertinant
	Unusual Hazards: Not pertinant
EXPOSURE	First-Aid Measures: (1) **Inhalation:** Move to fresh air. Consult doctor if toxic symptoms exists. (2) **Eye Contact:** Flush with large amount of water for minimum 15 min. contact doctor IR irritation persist. (3) **Skin Contact:** Remove contaminated clothing and flush effected area with water. If irritation persist consult doctor.
	Antidotes/Dosages
SPILLS	**Steps to be taken**
	Waste Disposal Method : Not pertinant

8. ADDITIONAL INFORMATION/REFERENCES

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Source On-Site Emergency Plan of M/s Tata Chemicals Limited/Erstwhile Hind Lever Chemicals Ltd)

MATERIAL SAFETY DATA SHEET

1. CHEMICAL IDENTITY :

Chemical name : Sulphuric Acid (98%)		**Chemical classification**	
Synonyms: Furnace Oil		**Trade name :** Fuel Oil	
Formula : H_2SO_4	**CAS No.**	**U.N.No.**	
Shipping name:			
Regulated identification:	**Codes/Labels:**	**Hazchem No. :**	
	Hazardous waste:	**ID No. :**	

Hazardous ingredients	CAS No.	Hazardous ingredients	CAS No.
1.		3.	
2.		4.	

2. PHYSICAL AND CHEMICAL DATA :

Boiling point : 330 °C	**Physical state:**	**Appearance** Colourless Oily Liquid
Melting Point : 3 °C	**Vapour pressure** (mmHg): 1 mm at 145.8 °C	**Odour:** Odourless
Vapour Density (Air=1) :	**Solubility in water :** Very High	**Others**
Specific Gravity (Water=1) : 1.834	**PH:** Acidic	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability: Yes/No	**LEL** 1 %	**Flash Point** °C	**Auto Ignition Temperature** °C
TDG Flammability:	**UEL** 12 %	**Flash Point :** Not combustible but strong oxidising agent	**Hazardous combination products**
Explosion sensitivity to impact:	**Explosion sensitivity to static electricity:**		

Hazardous Polymerisation: Nil

Combustible Liquid: No	**Explosive Material**	**Corrosive Material**
Flammable Material	**Oxidiser**	**Others**
Pyrophoric Material	**Organic Peroxide**	

Special Fire fighting procedures:
Poisonous gases may be produced due to heating of acid. Keep container cool with water spray. Stay upward/ use breathing apparatus. Do not allow water to enter container.

Unusual Fire and explosion hazards:
Flammable hydrogen gas may be produced on contact with metal before hot work, purge container & test with explosimeter.

4. REACTIVITY DATA

Chemical Stability: Stable

Incompatibility with other Material : Incompatibility can react with combustibles to cause fire. React with water/steam to produce heat. Reacts with metals to produce inflammable Hydrogen.

Reactivity

Hazardous Decomposition Products: Poisonous gases may be produced when heated.

5. HEALTH HAZARD DATA

Routes of Entry

Effects of Exposure.

1. Contact with skin results in severe burns, blisters and ulceration.
2. Contact with eye may cause permanent damage to eye.
3. Repeated / prolonged inhalation of mist can cause inflammation in upper respiratory tract Concentrated vapour/ mist of hot acid can lead to loss of consciousness and lung damage.

Emergency Treatment:

1. For Skin contact, remove contaminated clothing. Flush effected parts with large amount of water for atleast 15 min Consult doctor.
2. **Eye Contact**: Flush with large amount of water for minimum 15 min. Use eye wash fountain Consult doctor
3. **In case of Indigestion, drink lot of water. If water is conscious. Do not induce vomiting. Consult doctor.**

TLV : 1 mg/m^3 Air			STEL ppm mg/m^3		
Permissible Exposure Limit			Odour Threshold		
ppm	mg/m^3	LD_{50}	ppm	mg/m^3	LD_{50}
NFPA Hazard Signals : Health	Flammability	Stability	Special		

6. PREVENTIVE MEASURES

Personal Protective Equipment : PVC or Rubber Gloves

Eye protection Safety goggles / Face Shield

Respiratory protection In case of fire/spill stay upward. Use gas mask to avoid inhaling vapours/gases

Handling & Storage Precautions : Always use safety goggles, gloves, boots for operating pumps/valves, for spills maintenance on lines/vessel entry/tanker loading etc, use full PVC suit.

Special precautions in handling and storing dilute acid is highly corrosive for iron/steel. Store away from combustible materials. Sulphuric Acid is highly corrosive in case of exposure first-aid should be given immediately.

7. EMERGENCY AND FIRST AID MEASURES

FIRE	FIRE EXTINGUISHING Media
FIRE	Special Procedures
	Unusual Hazards
EXPOSURE	First-Aid Measures
	Antidotes/Dosages
SPILLS	Steps to be taken : Avoid contact with acid Shut off leak material if possible. Use full protective equipment. Neutralise spills with lime or soda-ash Flush area with water. Direct water jet to outside of spills so that dilution and heat evolution is gradual.
	Waste Disposal Method: Do not allow acid to enter drain or spread For this ring acid with Lime/Soda-Ash, sand and gradually shovel this into spillage. Ensure all acid is neutralized. If Acid does enter drain, neutralise by Soda-Ash. Do not allow water to enter leaky vessel.

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MATERIAL SAFETY DATA SHEET

1. CHEMICAL IDENTITY :

Chemical name : Acetic Acid		**Chemical classification :** Inorganic Gas	
Synonyms : Vinegar Acid, Ethanoic Acid, Methane carboxylic acid.		**Trade name :** Organic Acid	
Formula CH_3COOH	**CAS No. :** 64-19-7		**U.N No. :** 2789
Regulated identification	**Codes/Labels :** Corrosive Gas Class 8		**Hazchem Code :** Not listed
	Hazardous waste ID No. : 5		**Shipping Name:** Acetic Acid

Hazardous ingredients	CAS No.	Hazardous ingredients	CAS No
1. Acetic Acid (100%)	64-19-7	3.	
2.		4.	

2. PHYSICAL AND CHEMICAL DATA :

Boiling Range/point: 118.1 °C	**Physical state:** Liquid	**Appearance:** Colourless
Melting/Freezing Pt: 16.7 °C	**Vapour pressure @36°C :** 11.4 mm Hg at 20°C	**Odour :** Pungent
Vapour Density (Air=1): 2.07	**Solubility in water @30°C.** Miscible	**Others:** Miscible with alcohol and ether
Specific Gravity (Water=1): 1.0 gms / Litre	**PH :** 1 M Solution is 2.4	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability : Yes	**LEL:** 5.4%	**Flash Point :** 44°C (OC)	**Auto Ignition Temperature °C :** 426.6
TDG Flammability : N.A	**UEL:** 16.0 %	**Flash Point :** 44 °C (CC)	**Hazardous combination products:** Emits irritating vapours when heated
Explosion sensitivity to impact : Stable	**Explosion sensitivity to static electricity :** Data not available		

Hazardous Polymerisation : Will Not Occur

Combustible Liquid : Yes	**Explosive Material :** No	**Corrosive Material :** Yes
Flammable Material : Yes	**Oxidiser :** No	**Others**
Pyrophoric Material : No	**Organic Peroxide :** No	

4. REACTIVITY DATA

Chemical Stability : Stable

Incompatibility with other materials : Strong oxidisers, chromic acid, sodium peroxide, nitric acid, oleum, ClF_3, ethylene diamine, ethylene imine, NH_4NO_3

Reactivity : Reacts vigorously with oxidising materials. Attacks most common metals. Excellent solvent for many synthetic resins or rubber.

Hazardous Reaction Products : None in particular.

5. HEALTH HAZARD DATA

Routes of Entry : Inhalation, Ingestion, Skin and Eyes.

Effects of Exposure/Symptoms:

Inhalation : Breathing of vapours causes coughing, chest pain and irritation of nose and throat. May cause nausea and vomiting.

Skin : Contact causes burns

Eyes : Contact causes burns.

Emergency Treatment: Inhalation – Remove the victim at once to fresh air area. If breathing becomes difficult give oxygen Skin – Remove the wetted clothes, flush the affected area with plenty of water Eyes- Irrigate with plenty of water for 15 minutes Ingestion- If victim is conscious, have him drink water or milk. Get medical care as quickly as possible.	
TLV (ACGIH) - 10 ppm 25mg/m^3	STEL: Not listed
Permissible Exposure Limit: Asphyxiant	Odour Threshold: 1.0 ppm 2.4 mg/m^3
NFPA Hazard Signals: Health: 2 Flammability: 2 Reactivity: 1 Special:	

6. PREVENTIVE MEASURES

Personal Protective Equipment: Avoid contact with liquid or vapours. Do not eat or drink at work place. Provide PVC hand gloves, aprons, complete eye protection and respiratory protection.

Handling & Storage Precautions: Keep in a cool, dry, well ventilated place.

7. EMERGENCY AND FIRST AID MEASURES

FIRE	Fire Extinguishing Media Carbon dioxide, Dry chemical powder, water and alcohol foam.
FIRE	**Special Procedures**: Keep the containers cool by spraying water if exposed to heat or flame
	Unusual Hazards: Vapours may explode if ignited in an enclosed area.
EXPOSURE	**First-Aid Measures :** **Inhalation** – Remove the victim to fresh air area and provide artificial respiration or oxygen if necessary. **Eyes & Skin** – If substance has gone in eyes, wash with plenty of water for 15 mins. Remove the contaminated clothes and flush the affected area with plenty of water. Seek medical aid.
	Antidotes/Dosages : Not available
SPILLS	**Steps to be taken :** Shut off leaks if without risk. Contain the spillage on earth or sand. Wash the surface with plenty of soap and water.
	Waste Disposal Method : Neutralise with sodium bicarbonate and wash the area with plenty of water.

8. ADDITIONAL INFORMATION/REFERENCES :

Moderately explosive and fire hazard when exposed to heat and flame. Potentially explosive reaction with 5-Azidotetrazole, Bromine pentafluoride, Chromium trioxide, Hydrogen Peroxide, Potassium permanganate, Sodium Peroxide, Phosphorous trichloride.

DISCLAIMER

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Source: On-Site Emergency Plan of M/S MCC PTA India Corp Private Limited

MATERIAL SAFETY DATA SHEET

1. CHEMICAL IDENTITY :

Chemical name : Xylene		**Chemical classification** : Aromatic hydrocarbon
Synonyms : Dimethyl Benzene, Xylol, Methyl Toulene		**Trade name :**
Formula : C_4H_{10}	**CAS No. :** 1330-20-7	**U.N.No. :** 1307
Regulated identification	**Codes/Labels :** Flammable Liquid, Class 3	**Hazchem Code :** 3
	Hazardous waste ID No. : 5	**Shipping Name:** Xylene

Hazardous Ingredients	CAS No.	Hazardous Ingredients	CAS No.
1. p-Xylene	106-42-3	3. o-Xylene	95-47-6
2.m-Xylene	108-38-3	4.Toulene, Ethyl Benzene, non-aromatics and aromatics	

2. PHYSICAL AND CHEMICAL DATA :

Boiling Range/point: 137-140 °C	**Physical state:** Liquid	**Appearance:** Colourless
Melting/Freezing Pt: -13 to -48°C	**Vapour pressure @35°C :** 6.72 mm Hg at 21°C	**Odour :** Sweet
Vapour Density (Air=1): 3.7	**Solubility in water @30°C:** Not soluble	**Others:** Miscible with alcohol, ether and many other organic liquids.
Specific Gravity (Water=1): 0.864 at 20° / 4°C	**pH :** Not pertinent	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability : Yes	**LEL:** 1.1%	**Flash Point :** 37.7°C (OC)	**Auto Ignition Temperature °C** : 525
TDG Flammability : 3	**UEL:** 7 %	**Flash Point :** 29 °C (CC)	**Hazardous combination products** Emits acrid smoke and irritating fumes
Explosion sensitivity to impact : Stable	**Explosion sensitivity to static electricity :** Data not available		

Hazardous Polymerisation : Will Not Occur

Combustible Liquid : Yes	**Explosive Material :** No	**Corrosive Material :** No
Flammable Material : Yes	**Oxidiser :** No	**Others**
Pyrophoric Material : No	**Organic Peroxide :** No	

4. REACTIVITY DATA

Chemical Stability : Stable

Incompatibility with other materials : Oxidising materials.

Reactivity : Can react with oxidising materials.

Hazardous Reaction Products : Not available.

5. HEALTH HAZARD DATA

Routes of Entry : Inhalation, Ingestion, Skin and Eyes.

Effects of Exposure/Symptoms:

Vapours cause headache, dizziness. Liquid irritates eyes and skin. If taken into lungs causes severe coughing, distress, rapidly developing pulmonary edema. If indigested, causes nausea, vomiting, cramps, headache, coma and can be fatal. Kidney and liver damage may occur.

Emergency Treatment:
Inhalation – Remove the victim at once to fresh air area. Administer artificial respiration. Provide oxygen if necessary.
Ingestion- Do not induce vomiting.
Skin – Wipe off with water and soap. Seek medical aid immediately.
Eyes- Irrigate with plenty of water for 15 minutes.

TLV (ACGIH) : 100 ppm 435mg/m³	**STEL:** Not listed
Permissible Exposure Limit: Asphyxiant	**Odour Threshold:** 0.05 ppm 0.215 mg/m³

NFPA Hazard Signals: Health: 2 Flammability: 3 Reactivity: 0 Special:

6. PREVENTIVE MEASURES

Personal Protective Equipment: Avoid contact with liquid or vapours. Provide approved canister or air-supplied mask, face shield, plastic gloves, boots and aprons.

Handling & Storage Precautions: Store in a well ventilated, dry area away from heat, flame and oxidising materials.

7. EMERGENCY AND FIRST AID MEASURES

FIRE	**Fire Extinguishing Media:** Carbon dioxide, Dry chemical powder, foam.
FIRE	**Special Procedures:** Keep the containers cool by spraying water if exposed to heat or flame.
	Unusual Hazards: Flashback along vapour-trail may occur
EXPOSURE	**First-Aid Measures :** **Inhalation** – Remove the victim to fresh air area. Administer artificial respiration or oxygen if necessary **Ingestion** – Do not induce vomiting. **Skin** – Wash the affected area with plenty of water and soap. **Eyes** – Irrigate with plenty of water for 15 mins. Seek medical aid immediately.
	Antidotes/Dosages : Not available
SPILLS	**Steps to be taken :** Shut off leaks, if without risk. Absorb on sand or earth. Wash the surface with plenty of soap and water.
	Waste Disposal Method : Seal all waste in vapour-tight plastic bags for eventful disposal.

8 ADDITIONAL INFORMATION/REFERENCES :

As non aromatics 0.07%, toluene 14%, ethyl benzene 19.27%, p-xylene 7.84%, m-xylene 65.01%, o-xylene 7.63%, C9 and aromatics 0.04%, vapour / liquid exposure at 200 ppm causes irritation. A very dangerous fire hazard when exposed to heat or fire.

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Source: On Site Emergency Plan of M/S MCC PTA India Corp. Private Limited

MATERIAL SAFETY DATA SHEET

1. CHEMICAL IDENTITY :

Chemical name : Sodium Hydroxide		Chemical classification : Alkaline Inorganic Compound	
Synonyms : Caustic Soda		Trade name :	
Formula : NaOH	CAS No. : 1310-73-2	U.N.No. : 1823 / 1824	
Regulated identification	Codes/Labels : Corrosive Class 8	Hazchem Code : 3	
	Hazardous waste ID No. : 10	Shipping Name: Sodium Hydroxide	

Hazardous ingredients	CAS No.	Hazardous ingredients	CAS No.
1. Sodium Hydroxide	1310-73-2	3.	
2.		4.	

2. PHYSICAL AND CHEMICAL DATA :

Boiling Range/point: 1390 °C	Physical state: Solid	Appearance: White Flakes / Pellets
Melting/Freezing Pt: 318.4 °C	Vapour pressure @35°C :	Odour : Odourless
Vapour Density (Air=1): Not pertinent	Solubility in water @30°C Soluble	Others: Soluble in Alcohol, Methanol and Glycerol
Specific Gravity (Water=1): 2.12 at 24 °C/ 4°C	pH : 13-14	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability : No	LEL: Not pertinent	Flash Point : Not pertinent(OC)	Auto ignition Temperature °C : Not pertinent
TDG Flammability : 8	UEL: Not pertinent	Flash Point : Not pertinent (CC)	Hazardous combination products: Emits toxic fumes of Na_2O
Explosion sensitivity to impact : Stable	Explosion sensitivity to static electricity : Stable		

Hazardous Polymerisation : Will Not Occur

Combustible Liquid : No	Explosive Material : No	Corrosive Material : Yes
Flammable Material : No	Oxidiser : No	Others
Pyrophoric Material : No	Organic Peroxide : No	

4. REACTIVITY DATA

Chemical Stability : Stable

Incompatibility with other materials : Water, Acids, Flammable liquids, Organic halides, metals, Al, Sn, Zn, Nitromethane and Nitro compounds.

Reactivity : Vigorous reaction with Organic Halides, metals, Nitro Compounds.

Hazardous Reaction Products : Not available.

5. HEALTH HAZARD DATA

Routes of Entry : Inhalation, Ingestion, Skin and Eyes.

Effects of Exposure/Symptoms:
Inhalation – Causes small burns to upper respiratory tract and lungs, mild nose irritation.
Ingestion – Causes severe damage to mucous membrane. Severe scoring or perforation may occur.
Eyes – Severe damage.
Skin – Causes severe burns.

Emergency Treatment.
Inhalation – Remove the victim from exposure. Support respiration, give oxygen. If necessary
Ingestion- Give water or milk followed by dilute vinegar or fruit juice. Do not induce vomiting.
Skin – Wash the affected area with plenty of water and soap.
Eyes- Wash with plenty of water for 15 minutes. Seek medical aid immediately.

TLV (ACGIH) :	STEL: Not listed
Permissible Exposure Limit Asphyxiant	Odour Threshold: odourless ppm Odourless mg/m^3

NFPA Hazard Signals: Health: 3 Flammability: 0 Reactivity: 1 Special:

6. PREVENTIVE MEASURES

Personal Protective Equipment: Avoid contact with solid or liquid. Provide side covered safety goggles, face shield, filter or dust-type respirator, rubber shoes and rubber hand gloves.

Handling & Storage Precautions: Keep in cool, dry and well ventilated place.

7. EMERGENCY AND FIRST AID MEASURES

FIRE	**Fire Extinguishing Media:** Not Flammable.
FIRE	**Special Procedures:** Keep the containers cool by spraying water if exposed to heat or flame. Toxic gases are produced.
	Unusual Hazards: Flashback along vapour-trail may occur.
EXPOSURE	**First-Aid Measures :** If eyes are affected, flush with plenty of water for 15 mins. Skin – Remove contaminated clothes & shoes. Wash the affected area with plenty of water. If inhaled, remove the victim to fresh air area. Support respiration. Seek medical aid immediately for all types of exposures
	Antidotes/Dosages : Not available
SPILLS	**Steps to be taken :** Sweep and collect without making dust. Wash the surface with plenty of soap and water.
	Waste Disposal Method : Seal all waste in vapour-tight plastic bags for eventful disposal.

8. ADDITIONAL INFORMATION/REFERENCES :

A strong base. Vigorous reaction with 1,2,4,5 – Tetrachloro benzene has caused many industrial explosions and forms extremely toxic Tetrachlorodibenzodioxin. Under proper conditions of temperature, pressure and state of division, it can react or ignite violently with Acetic Acid, Acetaldehyde, Acetic Anhydride, Acrolein, Acrylonitrile, Allyl Alcohol, Allyl Chloride.

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Source: On-Site Emergency Plan of M/S Hindustan Lever Limited

MATERIAL SAFETY DATA SHEET

1. CHEMICAL IDENTITY :

Chemical name : Sulphur (Solid)		Chemical classification :	
Synonyms : Sulphur (Elemental-Monoclinic)		Trade name : Sulphur (Solid)	
Formula : S	CAS No. :	U.N.No. :	
Regulated identification	Codes/Labels :	Hazchem Code :	
	Hazardous waste ID No. : 10	Shipping Name: Sodium Hydroxide	
Hazardous ingredients	CAS No.	Hazardous ingredients	CAS No.
1.		3.	
2.		4.	

2. PHYSICAL AND CHEMICAL DATA :

Boiling point: 444.6 °C	Physical state: Solid	Appearance: Pale yellow
Melting/Freezing Pt: 119 °C	Vapour pressure : 1mm at 183.8 °C	Odour : Odourless
Vapour Density (Air=1) :	Solubility in water: Insoluble	Others:
Specific Gravity (Water=1): 2.07	pH :	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability : No	LEL: N.A	Flash Point : 207.2 °C	Auto Ignition Temperature °C : 232.3 °C
TDG Flammability : 8	UEL: N.A	Hazardous combination products:	
Explosion sensitivity to impact :	Explosion sensitivity to static electricity :		
Hazardous Polymerisation : Not pertinent.			
Combustible Material : No	Explosive Material :	Corrosive Material :	
Flammable Material :	Oxidiser :	Others	
Pyrophoric Material :	Organic Peroxide :		

4. REACTIVITY DATA

Chemical Stability : Stable

Incompatibility with other materials: Forms explosive mixtures with oxidising agents like chlorates, nitrates etc.

Hazardous Decomposition Products : Burns to produce Sulphur dioxide.

5. HEALTH HAZARD DATA

Routes of Entry : Inhalation, Ingestion, Skin and Eyes.

Effects of Exposure/Symptoms:
Inhalation – Causes small burns to upper respiratory tract and lungs, mild nose irritation.
Ingestion – Causes severe damage to mucous membrane. Severe scoring or perforation may occur.
Eyes – Severe damage.
Skin – Causes severe burns.

Emergency Treatment:
Inhalation – Remove the victim from exposure. Support respiration, give oxygen, if necessary.
Ingestion- Give water or milk followed by dilute vinegar or fruit juice. Do not induce vomiting.
Skin – Wash the affected area with plenty of water and soap.
Eyes- Wash with plenty of water for 15 minutes. Seek medical aid immediately.

TLV (ACGIH) : Sulphur dust is not toxic.	STEL:
Permissible Exposure Limit:	Odour Threshold: ppm mg/m^3

NFPA Hazard Signals: Health: Flammability: Reactivity: Special:

6. PREVENTIVE MEASURES

Respiratory protection: Normally not required. If dust is present use dust respirators **Protective Gloves / Gum boots :** Not required. **Eye Protection : Use** Safety goggles. **Other Protective Equipment :** Not required.	
Handling & Storage Precautions: Store in well ventilated area. Do not allow dust to accumulation. Keep away from oxidising agents and source of fire.	
[redacted]	
7. EMERGENCY AND FIRST AID MEASURES	
FIRE	**Fire Extinguishing Media:** Water or sand.
FIRE	**Special Procedures:** Poisonous gas(Sulphur Dioxide) is produced in fire stay upward and use breathing apparatus / wet nose mask.
	Unusual Hazards: Auto ignition temperature 232.3 °C & tendency to develop static charge. Sulphur dust is a fire & explosion hazard.
EXPOSURE	**First-Aid Measures :** If eyes are affected, flush with plenty of water for 15 mins. Skin – Remove contaminated clothes & shoes. Wash the affected area with plenty of water. If inhaled, remove the victim to fresh air area. Support respiration. Seek medical aid immediately for all types of exposures.
	Antidotes/Dosages :
SPILLS	**Steps to be taken :** Not pertinent.
	Waste Disposal Method : Sulphur should be kept in contained area. Waste Sulphur should not go as open land fill as it catches fire easily.
[redacted]	
8. ADDITIONAL INFORMATION/REFERENCES :	
[redacted]	

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Source: On-Site Emergency Plan of M/S Tata Chemicals Limited(Erstwhile Hind Lever Chemicals Ltd)

MATERIAL SAFETY DATA SHEET

1. CHEMICAL IDENTITY :

Chemical name : High Speed Diesel		**Chemical classification :** Fuel	
Synonyms : Gas Oil		**Trade name :** Diesel Oil	
Formula : A complex mixture of hydrocarbons.	**CAS No. :**	**U.N.No :** 1202	
Regulated identification:	**Codes/Labels :** 3/Class 3, Flammable Liquid	**Hazchem Code :**	
	Hazardous waste ID No. :	**Shipping Name:** Diesel Oil	

Hazardous ingredients	**CAS No.**	**Hazardous ingredients**	**CAS No.**
1.		3.	
2.		4.	

2. PHYSICAL AND CHEMICAL DATA :

Boiling Range/point: 110 °C to 400°C	**Physical state:** Liquid	**Appearance:** White Flakes / Pellets
Melting/Freezing Pt: 0-18 °C	**Vapour pressure @35°C :** <0.1 psi@38°C	**Odour :** Odourless
Vapour Density (Air=1): 3.0 – 5.0	**Solubility in water @30°C:** Insoluble in water. Floats on water.	**Others:** Soluble in Alcohol, Methanol and Glycerol
Specific Gravity (Water=1): 0.84 gm / l @ 15 °C	**pH :** Not pertinent	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability : Yes	**LEL:** 0.5%	**Flash Point :** > 32°C	**Auto Ignition Temperature** °C 230-250 °C
TDG Flammability : 3	**UEL:** 5.0%	**Flash Point :** Data not available	**Hazardous combination products:** Acrid smoke / CO / CO_2
Explosion sensitivity to impact : Stable	**Explosion sensitivity to static electricity :** Stable		

Hazardous Polymerisation : Does not occur

Combustible Liquid : Yes	**Explosive Material :** No	**Corrosive Material :**
Flammable Material : Yes	**Oxidiser :** No	**Others:**
Pyrophoric Material : No	**Organic Peroxide :** No	

4. REACTIVITY DATA

Chemical Stability : Chemically Stable

Incompatibility with other materials : Incompatible with strong oxidisers.

Reactivity : Does not react with common materials but may react with oxidising agents.

Hazardous Reaction Products : Data not available.

5. HEALTH HAZARD DATA

Routes of Entry : Inhalation, Ingestion, Skin and Eyes.

Effects of Exposure/Symptoms:

Inhalation – Dizziness, headache.

Ingestion – Nausea and vomiting. Irritation of mouth and gastro intestinal tract. Rapidly developing. potentially fatal chemical pneumonitis

Eyes & skin contact – Irritation will remove natural fat from skin. Prolonged or repeated exposure shall lead to skin cancer.

Emergency Treatment Inhalation – If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. Ingestion - Will cause irritation of stomach and may cause vomiting. Skin – Remove contaminated clothing, wash all the affected skin thoroughly with soap and water. Eyes - Wash with copious amount of water.	
TLV (ACGIH) :	STEL:
Permissible Exposure Limit:	Odour Threshold: ppm mg/m^3
NFPA Hazard Signals: Health: Flammability:	Reactivity: Special:

6 PREVENTIVE MEASURES

Respiratory Protection: Normally not required.
Protective Gloves: PVC Hand gloves.
Eye protection : Safety goggles.
Handling & Storage Precautions : Keep away from all sources of ignition. No hot work allowed in vicinity. Ensure earthing of tank, tankers, pipeline to prevent static electrically which may cause fire.
Other Precautions : For hot work on container empty out and clean. Purge with fresh air and test with explosion meter. If OK start work, but continue air purging and frequent testing with explosion meter.

7. EMERGENCY AND FIRST AID MEASURES

FIRE	**Fire Extinguishing Media:** Foam, CO_2 or DCP Extinguisher.
FIRE	**Special Procedures:** Use any of the above extinguisher. If container exposed to fire, keep cool by water spray. Stay upwind. Do not direct a jet or water in a burning pool.
	Unusual Hazards: Can form explosive mixture with air particularly in empty uncleaned receptacles. Heating will cause pressure rise with risk of bursting and explosion.
EXPOSURE	**First-Aid Measures :** If eyes are affected, flush with plenty of water for 15 mins. Skin – Remove contaminated clothes & shoes. Wash the affected area with plenty of water. If inhaled, remove the victim to fresh air area. Support respiration. Seek medical aid immediately for all types of exposures.
	Antidotes/Dosages : Not available
SPILLS	**Steps to be taken :** Extinguish all sources of ignition. Shut off leak if possible. Do not allow to spread or to enter drains. Contain spill by a dyke of sand or earth.
	Waste Disposal Method : Large spill should be contained in dyke and oil collected back in salvage tank. Small spills should be absorbed in earth or sand which should be suitably disposed off. Remainder can be washed off preferably with detergent.

8. ADDITIONAL INFORMATION/REFERENCES :

DISCLAIMER:

[redacted] included on the last page of this ANNEXURE.

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Source: On-site Emergency Plan of M/s Hindustan Lever Limited & HPCL-Haldia Terminal

MATERIAL SAFETY DATA SHEET

1. CHEMICAL IDENTITY :

Chemical name : Liquefied Petroleum Gas		**Chemical classification :** Hydrocarbon Mixture	
Synonyms : LPG,Propane,Butane,Propylene, Purofax,Bottled Gas		**Trade name :** LPG	
Formula : C_3H_8 & C_4H_{10}	**CAS No. :** 68476-85-7	**U.N.No. :** 1075	
Regulated identification:	**Codes/Labels :** Flammable,Class2	**Hazchem Code :** 2WE	
	Hazardous waste ID No. :	**Shipping Name:** Petroleum Gases, Liquefied	
Hazardous ingredients	**CAS No.**	**Hazardous ingredients**	**CAS No.**
1. Propane	74-98-6	3. Propylene	115-07-1
2. Butane	106-97-8	4.	

2. PHYSICAL AND CHEMICAL DATA :

Boiling Range/point: >-40 °C	**Physical state:** Gas at 15°C and 1 atm	**Appearance:** Colourless
Melting/Freezing Pt: Not Pertinent	**Vapour pressure @35°C :** Not available	**Odour :** Mercaptan added as an odouriser
Vapour Density (Air=1): 1.5	**Solubility in water @30°C:** Slight	**Others:** Soluble in Alcohol, organic solvents.
Specific Gravity (Water=1): 0.51-0.58 at 15°C	**pH :** Not pertinent	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability : Yes	**LEL:** 1.9%	**Flash Point (OC):**	**Auto Ignition Temperature** °C : 466.1 Propane, 405 Butane
TDG Flammability : 2	**UEL:** 9.5%	**Flash Point (CC):** -104.4	
Explosion sensitivity to impact : Not established	**Explosion sensitivity to static electricity :** May explode		**Hazardous combination products.** Emits CO / CO_2
Hazardous Polymerisation : Does not occur			
Combustible Liquid : No	**Explosive Material :** No	**Corrosive Material :** No	
Flammable Material : Yes	**Oxidiser :** No	**Others:**	
Pyrophoric Material : No	**Organic Peroxide :** No		

4. REACTIVITY DATA

Chemical Stability : Stable

Incompatibility with other materials : Strong oxidisers.

Reactivity : No reaction with common materials but may react with oxidising materials.

Hazardous Reaction Products : Not available.

5. HEALTH HAZARD DATA

Routes of Entry : Inhalation, Skin

Effects of Exposure/Symptoms:

Concentration in air greater than 10% causes dizziness in few minutes. 1% conc Gives the same symptoms in 10 mts. High concentration causes aspyxiation. Liquid on skin causes frosibite.

Emergency Treatment: Seek medical aid immediately

Inhalation – If inhaled, remove victim to fresh air area. Provide artificial resuscitation.

Skin – Remove the wetted clothes & wash the affected area with plenty of water.

Eyes- Flush with plenty of water for 15 min.

TLV(ACGIH) : 1000 ppm, 1800 mg/m^3	STEL : Not listed
LD_{50} (Oral-Rat), mg/kg : Not listed	LD_{50} , mg/kg :
Permissible Exposure Limit: Not listed	Odour Threshold: ppm mg/m^3 5000 to 20000

NFPA Hazard Signals: Health: 1 Flammability: 4 Reactivity: 0 Special:

6. PREVENTIVE MEASURES

Personal Protective Equipment: Avoid contact with liquid or gas.

Handling & Storage Precautions : Provide hand gloves, safety goggles, gas mask, protective over-clothing and shoes.

7. EMERGENCY AND FIRST AID MEASURES

FIRE	**Fire Extinguishing Media:** CO_2 ,Dry chemical powder, water spray
FIRE	**Special Procedures:** Keep the containers cool by spraying water if exposed to fire or heat.
	Unusual Hazards: If not cooled sufficiently, containers will explode in fire.
EXPOSURE	**First-Aid Measures** : If inhaled, remove the victim to open air area and artificial resuscitation may be provided if required. If skin is affected with the liquid, remove the clothing & wash the affected area with plenty of water. Seek medical aid.
	Antidotes/Dosages : Not available
SPILLS	**Steps to be taken** : Shut off leaks if without risk. Warn everybody that air mixture is explosive.
	Waste Disposal Method : Allow gas to burn under control.

8. ADDITIONAL INFORMATION/REFERENCES :

Avoid contact with oxidisers. Olefinic impurities may lead to narcotic effect or it may act as a simple asphyxiant. A very dangerous hazard when exposed to heat or flame. If fire is big, keep surrounding areas cool by spraying water.

DISCLAIMER

Information contained in these Safety Data Sheets [illegible] guarantee or warranties of any kind are made as to [illegible] application or results to be obtained from them [illegible] the information contained in the Safety Data Sheet [illegible] handled or sold by him as the case may be [illegible] implied in respect of the adequacy of the individual document for any particular purpose [illegible] included on the last page of this ANNEXURE

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Source: IOCL - Haldia Terminal

MATERIAL SAFETY DATA SHEET

1. CHEMICAL IDENTITY :

Chemical name : Chlorine		**Chemical classification :** Inorganic Gas or Liquid	
Synonyms : -		**Trade name :** Chlorine	
Formula : Cl_2	**CAS No. :** 7782-50-5	**U.N.No. :** 1017	
Regulated identification:	**Codes/Labels :** Non Flammable Gas,Poison, Class2	**Hazchem Code** . 2XE	
	Hazardous waste ID No. : 17	**Shipping Name:** Chlorine	

Hazardous ingredients	CAS No.	Hazardous ingredients	CAS No.
1. Chlorine	7782-50-5	3.	
2.		4.	

2. PHYSICAL AND CHEMICAL DATA :

Boiling Range/point: -34 °C	**Physical state:** Liquid compr. Gas	**Appearance:** Greenish Yellow
Melting/Freezing Pt: -101°C	**Vapour pressure @35°C :** 4800 mm Hg at 20°C	**Odour :** Irritating, Bleach like choking odour
Vapour Density (Air=1): 2.49	**Solubility in water @30°C:** Slightly soluble.	**Others:** Soluble in Alkalis.
Specific Gravity (Water=1): 1.47 at 0°C	**pH :** Not pertinent	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability : No	**LEL:** Not pertinent%	**Flash Point (OC):** Not pertinent	**Auto Ignition Temperature °C :** Not pertinent
TDG Flammability : 2	**UEL:** Not pertinent%	**Flash Point (CC):** Not pertinent	**Hazardous combination products:** Toxic products are generated when combustibles burn in chlorine.

Explosion sensitivity to impact : Stable	**Explosion sensitivity to static electricity :** Stable	

Hazardous Polymerisation : Does not occur

Combustible Liquid : No	**Explosive Material :** No	**Corrosive Material :** Yes
Flammable Material : No	**Oxidiser :** Yes	**Others:** Supports combustion
Pyrophoric Material : No	**Organic Peroxide :** No	

4. REACTIVITY DATA

Chemical Stability : Stable

Incompatibility with other materials : Combustible substances, finely divided metals.

Reactivity : Violent reaction with alcohol, explosive reaction with metals, potentially dangerous reaction with hydrocarbons; Lewis acids, sulfides, Tri-alkyl Boranes. Forms explosive mixtures with hydrogen.

Hazardous Reaction Products : Toxic products are generated when combustibles burn in chlorine.

5. HEALTH HAZARD DATA

Routes of Entry : Inhalation, Skin, Ingestion and Eyes.

Effects of Exposure/Symptoms:
Causes eye irritation, sneezing, copious salivation, general excitement, restlessness. High concentration causes respiratory distress and violent coughing, often with retching. Death may result from suffocation.

Emergency Treatment: Inhalation – Remove victim to fresh air area, support respiration, give oxygen if necessary Eyes- Flush with large amount of water for atleast 15 min. Seek medical aid immediately for all types of exposures.	
TLV(ACGIH) : 1 ppm, 3 mg/m^3	STEL : 3 ppm, 9 mg/m^3
LD_{50} (Oral-Rat), mg/kg : Not listed	LD_{50}, mg/kg :
Permissible Exposure Limit: 1 ppm, 3 mg/m^3	Odour Threshold: 0.3 to 3.5 ppm 10.16 mg/m^3
NFPA Hazard Signals: Health: 3 Flammability: 0 Reactivity: 0 Special:	

6. PREVENTIVE MEASURES

Personal Protective Equipment: Avoid contact with liquid or vapour. Provide PVC gloves, gumboots, rubber overcoat, head mask, SCBA.s

Handling & Storage Precautions : Keep in a cool, relatively isolated, well ventilated place, store in cylinders, pressure vessels, or pipelines.

7. EMERGENCY AND FIRST AID MEASURES

FIRE	**Fire Extinguishing Media:** Not Flammable.
FIRE	**Special Procedures:** Keep the containers cool by spraying water if exposed to heat or flame. In no circumstances water shall be directed towards leaking containers.
	Unusual Hazards: Poisonous gases are produced in fire.
EXPOSURE	**First-Aid Measures :** If inhaled, move the victim to fresh air area. If chlorine comes in contact with eyes or skin, wash with plenty of water under quick opening safety shower and eye wash fountain. Seek medical aid immediately for all types of exposures.
	Antidotes/Dosages : Not available
SPILLS	**Steps to be taken :** Shut off leaks if without risk, Contain liquid with earth or sand. Prevent the liquid from entering the sewer. Vapours create toxic atmosphere. Knock down vapours with water spray.
	Waste Disposal Method : Neutralise small liquid spillage with soda ash & drain with abundant water. Cover pool with protein foam, so that release of vapour to atmosphere is low and under control.

8. ADDITIONAL INFORMATION/REFERENCES :

Incase of large escapes, the presence of cloud can be marked with Ammonia with which it will turn into mist. Run away from the gas clouds in a direction perpendicular to the wind direction. Avoid liquid chlorine from leaking and body contact. Persons with pulmonary diseases should avoid the exposure. A concentration of 3.5 ppm produces a detectable odour. 15 ppm causes immediate irritation of the throat. Concentration of 50 ppm are dangerous for even short exposures. 1000 ppm is fatal. Can react to cause fires/explosion on contact with Turpentine, illuminating gas, Polypropylene, Rubber, Sulfamic acid, Acetaldehyde, Alcohols. Bring the leaking portion of the cylinder to the uppermost position, so that only the gas escapes and not the liquid.

DISCLAIMER

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Source: IOCL - Haldia Terminal

MATERIAL SAFETY DATA SHEET

1. CHEMICAL IDENTITY :

Chemical name : MS		**Chemical classification :** Organic Mixture	
Synonyms : Motor Spirit, Petrol		**Trade name :** Chlorine	
Formula : C4-C11 hydrocarbon mixture	**CAS No. :** 8006-61-9	**U.N.No. :** 1203	
Regulated identification:	**Codes/Labels :** -	**Hazchem Code :** 3YE	
	Hazardous waste ID No. :	**Shipping Name:**	
Hazardous ingredients	**CAS No.**	**Hazardous ingredients**	**CAS No.**
1.		3.	
2.		4.	

2. PHYSICAL AND CHEMICAL DATA :

Boiling Range/point: 40 to 200 °C	**Physical state:** Liquid	**Appearance:**
Melting/Freezing Pt: -90.5 to – 95.4 °C	**Vapour pressure @35°C :** 0.7 Kg/ cm^2 at 35 °C	**Odour :** Characteristic
Vapour Density (Air=1): 3-4	**Solubility in water @30°C:** Insoluble in water	**Others:**
Specific Gravity (Water=1): 0.73 at 20°C	**pH :**	

3. FIRE AND EXPLOSION HAZARD DATA

Flammability : Yes	**LEL %V:** 1.4 %	**Flash Point (OC):** -45 °C	**Auto Ignition Temperature °C :** 257 °C
TDG Flammability :	**UEL %V:** 7.4 %	**Flash Point (CC):** Not pertinent	**Hazardous combination products:**

Explosion sensitivity to impact :	**Explosion sensitivity to static electricity :**	
Hazardous Polymerisation :		
Combustible Liquid :	**Explosive Material :**	**Corrosive Material :**
Flammable Material :	**Oxidiser :**	**Others:**
Pyrophoric Material :	**Organic Peroxide :**	

4. REACTIVITY DATA

Chemical Stability :

Incompatibility with other materials : Can form explosive mixture with air.

Reactivity :

Hazardous Reaction Products :

5. HEALTH HAZARD DATA

Routes of Entry : Inhalation, Ingestion. It is not known whether gasoline poisoning may be computed by percutaneous absorption.

Effects of Exposure/Symptoms:

Local-irritating to skin, conjuctiva and mucous membranes, dermatitis from repeated and prolonged contact with liquid.

Systemic- Vapour acts as CNS depressant. Low concentration-Flushed face, staggering gait, slurred speech, mental confusion.

High concentration- Unconsciousness, coma, possible death due to respiratory failure.

Acute-Haemorrhage of pancreas, fat degeneration of liver and glomeruli of kidneys, passive congestion of spleen, chemical pneumonitis, pulmonary edema.

Emergency Treatment: Remove victim to fresh air, give artificial respiration, give oxygen if necessary, get medical help.	
TLV(ACGIH) : 500 ppm, 900 mg/m^3	**STEL : 500 ppm, 1500 mg/m^3**
Permissible Exposure Limit: -	**Odour Threshold: 0.25 ppm**
NFPA Hazard Signals: Health: 1 Flammability: 3 Reactivity: 0 Special:	

6. PREVENTIVE MEASURES

Personal Protective Equipment: Goggles for eye protection, plastic or rubber gloves, wash eyes with water, barrier creams and impervious gloves protective clothing, air masks.

7 EMERGENCY AND FIRST AID MEASURES

FIRE	
FIRE	
EXPOSURE	
SPILLS	

8. ADDITIONAL INFORMATION/REFERENCES :

DISCLAIMER

Information contained in this Safety Data Sheet is believed to be reliable but no representation guarantee or warranties of any kind are made as to its accuracy suitability for particular application of results to be obtained from it is not to be taken as a warranty or representation the information contained in the Safety Data Sheet is relevant to the product manufactured handled or sold by us as the case may be. The Company makes no warranties expressed or implied in respect of the adequacy of the information for any particular purpose. (To be included on the last page of this ANNEXURE)

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Source Reliance Industries Limited, MCB Terminal

SUMMARY OF RISK ANALYSIS CARRIED BY MAH UNITS

The following scenarios those have potential to escalate into off-site emergency are provided by the individual MAH units.

1. IOCL Haldia Refinery

Toxic Chemicals

1. Chemicals : a) Ammonia b) Chlorine c) H_2S
2. Hazards posed : Health Hazard
3. Capacity of Largest Storage Tank : a) Ammonia – 32.5 MT
   b) Chlorine – 850 Kg.
   c) H_2S – No storage, only process line hold up

4 Scenario Assumption :

Ammonia		Downwind Toxic Hazard Distance (m)	
Level of concern	Lethal conc. For 23.3 min exposure (mg/m3)	Class B	Class F
1% fatality	2123	1062 x 508	25[illegible] x 81
RIC-50	145	6806 x 1344	892 x 159

Chlorine		Downwind Toxic Hazard Distance (m)	
Level of concern	Lethal conc For 5 5 min exposure (mg/m3)	Class B	Class F
1% fatality	763	443 x 220	143 x 41
RIC-50	52.5	2650 x 580	483 x 85

H_2S		Downwind Toxic Hazard Distance (m)	
Level of concern	Lethal conc. For 7 min exposure (mg/m3)	Class B	Class F
1% fatality	320	553 x 46	79 x 18
RIC-50	53	2684 x 218	339 x 62

Flammable Gases

1. Chemicals : a) LPG b) H_2
2. Hazards posed : Fire
3. Capacity of Largest Storage Tank : a) LPG – 740.5 MT
   b) H_2 - 92.3 m^3.
4. Scenario Assumption :

LPG LEL (%V-1.9%)		
Level of concern	Thermal Load (KW/m2)	Hazard Distance(m) from the center of the BLEVE
1% fatality	9.24	825
RIC-50	5.32	937

H2 LEL (%V-4.1%)		
Level of concern	Thermal Load (KW/m2)	Hazard Distance(m) from the center of the BLEVE
1% fatality	46.2	85
RIC-50	26.6	108

2. **Bharat Petroleum Corporation Limited- Haldia Coastal Installation**

1. Chemicals : HSD
2. Hazards posed : Fire
3. Capacity of Largest Storage Tank : 50000 KL
4. Scenario Assumption :

Damage caused	Incident Flux(KW/m2)
100 % lethality in 1 min. 15 lethality in 10 sec.	37.5
100% lethality in 1 min, significant injury in 10 sec.	25.0
1 % lethality in 1 min. 1st degree burns in 10 sec.	12.5
Causes pain if duration is longer than 20 min. Out blistering unlikely.	4.0
Causes no discomfort for long exposure.	1.6

3. **Exide Industries Limited**

Flammable

1. Chemicals : LPG
2. Hazards posed : Fire/Explosion
3. Capacity of Largest Storage Tank : LPG - 30 MT
4. Scenario Assumption

Consequence of BLEVE involving a LPG Tank of 10 MT storage:

Consequence	Hazard Distance (m)
99 % of exposed people killed	100
10 % of exposed people killed	180
1 % of exposed people killed	220

Consequence of Vapour Cloud Explosion involving 10 Tonnes LPG

Consequence	Hazard Distance (m)
Heavy damage	82
Repairable damage	165
Glass damage causing injury	412

Consequence of Flash fire assuming 10 Tonnes LPG in the vapour cloud, 5 m/s wind speed and weather condition corresponding to stability category D

Downwind range	300 m
Maximum width	240 m
Occurring at	150 m downwind
Upwind range	30 m

4. **Haldia Petrochemicals Limited, Haldia**

Scenario –1

1. Chemical : LPG
2. **Hazards posed** : Fire / Explosion
3. **Capacity of Largest Storage Tank** : 1500 M^3
4. **Scenario Assumption** : LPG Sphere Catastrophic rupture

PASQUILL STABILITY AND WIND SPEED (m/s)	LFL DISTANCES (METERS)	OVERPRESSURE DISTANCES (METERS)
		2 PSI
2F	403	1000
7D	347	1000

Thermal Radiation Levels for Fire Ball / BLEVE

Thermal Radiation (KJ / M^2)	Radiation Distance (Meters)
375	839

Scenario-2

1. Chemical : Butene - 1
2. Hazards posed : Fire / Explosion
3. Capacity of Largest Storage Tank : 1780 M^3
4. Scenario Assumption : Butene - 1 Sphere Catastrophic rupture

PASQUILL STABILITY AND WIND SPEED(m/s)	LFL DISTANCES (METERS)	OVERPRESSURE DISTANCES (METERS)
		2 PSI
2F	504	1004
7D	747	1004

Thermal Radiation Levels for Fire Ball / BLEVE

Thermal Radiation (KJ / M^2)	Radiation Distance (Meters)
375	877

Scenario-3

1. Chemical : Propylene
2. Hazards posed : Fire / Explosion
3. Capacity of Largest Storage Tank : 2225 M^3
4. Scenario Assumption : Propylene Sphere Catastrophic rupture

PASQUILL STABILITY AND WIND SPEED(m/s)	LFL DISTANCES (METERS)	OVERPRESSURE DISTANCES (METERS)
		2 PSI
2F	364	1014
7D	476	1014

Thermal Radiation Levels for Fire Ball / BLEVE

Thermal Radiation (KJ / M^2)	Radiation Distance (Meters)
375	888

Scenario-4

1. Chemical : C4 Mix
2. Hazards posed : Fire / Explosion
3. Capacity of Largest Storage Tank : 1710 M^3

4. Scenario Assumption : C4-Mix Sphere Catastrophic rupture

PASQUILL STABILITY AND WIND SPEED (m/s)	LFL DISTANCES (METERS)	OVERPRESSURE DISTANCES (METERS)
		2 PSI
2F	411	987
7D	609	987

Thermal Radiation Levels for Fire Ball / BLEVE

Thermal Radiation (KJ / M^2)	Radiation Distance (Meters)
375	850

Scenario-5

1. Chemical : Butadiene
2. Hazards posed : Fire / Explosion
3. Capacity of Largest Storage Tank : 1870 M^3
4. Scenario Assumption : Butadiene Sphere Catastrophic rupture

PASQUILL STABILITY AND WIND SPEED (m/s)	LFL DISTANCES (METERS)	OVERPRESSURE DISTANCES (METERS)
		2 PSI
2F	556	1044
7D	832	1044

Thermal Radiation Levels for Fire Ball / BLEVE

Thermal Radiation (KJ / M^2)	Radiation Distance (Meters)
375	918

Scenario-6

1. Chemical : C4 Raffinate
2. Hazards posed : Fire / Explosion
3. Capacity of Largest Storage Tank : 2225 M^3
4. Scenario Assumption : C4 Raffinate Sphere Catastrophic rupture

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PASQUILL STABILITY AND WIND SPEED (m/s)	LFL DISTANCES (METERS)	OVERPRESSURE DISTANCES (METERS)
		2 PSI
2F	256	804
7D	395	804

Therma Radiation Levels for Fire Ball / BLEVE

Thermal Radiation (KJ / M^2)	Radiation Distance (Meters)
375	666

Scenario-7

1. Chemical : Ethylene
2. Hazards posed : Fire / Explosion
3. Capacity of Largest Storage Tank : 2225 M^3
4. Scenario Assumption : Ethylene Sphere Catastrophic rupture

PASQUILL STABILITY AND WIND SPEED (m/s)	LFL DISTANCES (METERS)	OVERPRESSURE DISTANCES (METERS)
		2 PSI
2F	434	1007
7D	585	1007

Thermal Radiation Levels for Fire Ball / BLEVE

Thermal Radiation (KJ / M^2)	Radiation Distance (Meters)
375	883

5. **Reliance Industries Limited-MCS Terminal.**

1.	Chemicals	:	a) HSD b) MS
2.	Hazards posed	:	Fire Hazard
3.	Capacity of Largest Storage Tank	:	17304 KL
4.	Scenario Assumption	:	

Full bore rupture of the pipeline and resultant can cause **maximum loss**. Therefore, Maximum Credible Loss Scenario (MCLS) is based on the **rupture** of the pipeline. The following table shows the damage for the two hydrocarbons **incase** of full rupture of the pipeline.

		HSD	MS
A.	Pool diameter(m)	46.0	46.0
B.	Damage distances for heat radiation (m)		
	100% lethality (37.5 KW/m^2)	5.5	6.4

(NOTE : As per above the MAH units are expected to response for release of the hazardous chemicals.)

ANNEXURE

INDUSTRIAL UNITS IN HALDIA DISTRICT

i) MAH Units

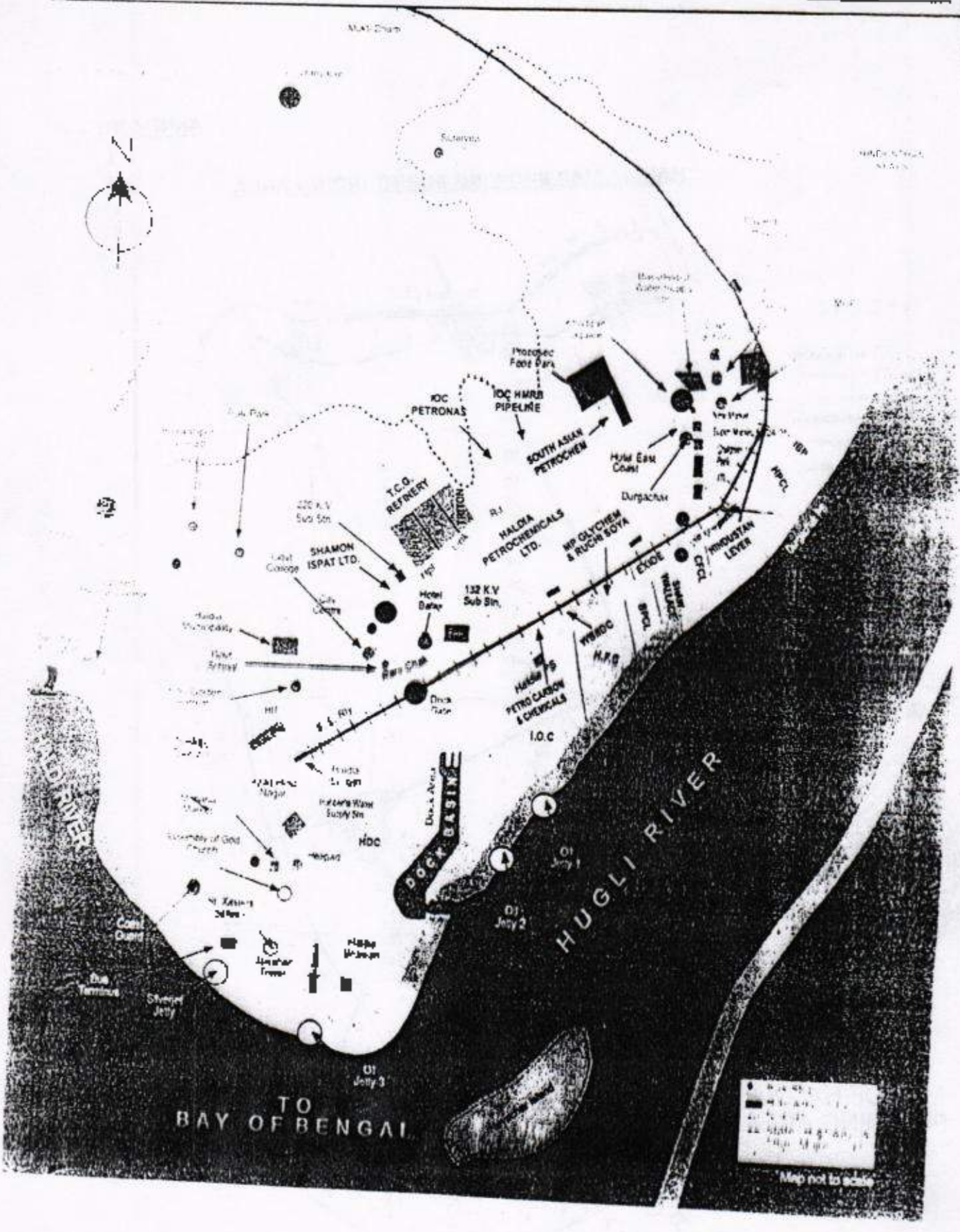
Sl. No.	Name of Industrial Unit
1.	Bharat Petroleum Corporation Ltd. Haldia Installation
2.	Bharat Petroleum Corporation Tank Wagon Gantry
3.	Consolidated Fibres and Chemicals Ltd.
4.	Exide Industries Limited (Export only)
5.	Haldia Petrochemicals Ltd.
6.	Tata Chemicals Ltd
7.	Hindustan Petroleum Corporation Limited, Haldia Terminal
8.	IBP Co. Ltd.
9.	Indian Oil Petronas Ltd.
10.	IOCL Haldia Barauni Crude Oil Pipe lines
11.	IOCL Haldia Refinery
12.	IOCL Marketing Division
13.	MCC PTA India Corp. Pvt. Ltd.
14	Reliance Industries Ltd. MCS Terminal
15.	Sanjana Cyrogenic Storages Ltd.
16.	Shaw Wallace Agro Chemicals Ltd.
17.	United Storage and Tank Terminals Ltd.

ii) **Non-MAH Units**

S. No.	Name of Industrial Unit
1.	A.V.R. & Co. (Haldia Installation)
2.	Allied Technipack, Barghasipur
3	B.P.L. Co-Genration Ltd., at Haldia
4	Black Bitumen WBIIDC
5	Central Maintenance Workshop (C.P.T.)
6	Exide Industries Ltd. (Domestic Fy.)
7	Gas Turbine Power Station, Haldia (W.B.S.E.B.)
8	General Cargo Bearth Workshop (C.P.T.)
9	Haldia Automobiles Durgachak.IBP Co. Ltd.
10	Haldia Pumping station (Delivery Point) I.O.C.
11	Hindustan Lever Ltd.
12	M.P. Glychem
13	Murcus Oil and Chemicals (P) Ltd. HPL Link Road
14	National Engineering Co., Shed No. 9
15	Petro Carbon & Chemicals Co.
16	Pioneer Minerals (P) Ltd.
17	Poddar Selicales, Dighasipur
18	Praxair India Ltd.
19	R.D.B. Rasayans Ltd. – H.P.L. Link road.
20	Ruchi Infrastructure
21	Shamon Ispat Co. Ltd.
22	Shiva Enterprise
23	South Asian Petrochemicals
24	Vijay Tanks and Vessels (P) Ltd.
25	Zinith Erectors (P) Ltd. Haldia Industrial Estate, Durgachak.

Map of Haldia

ANNEXURE – 7



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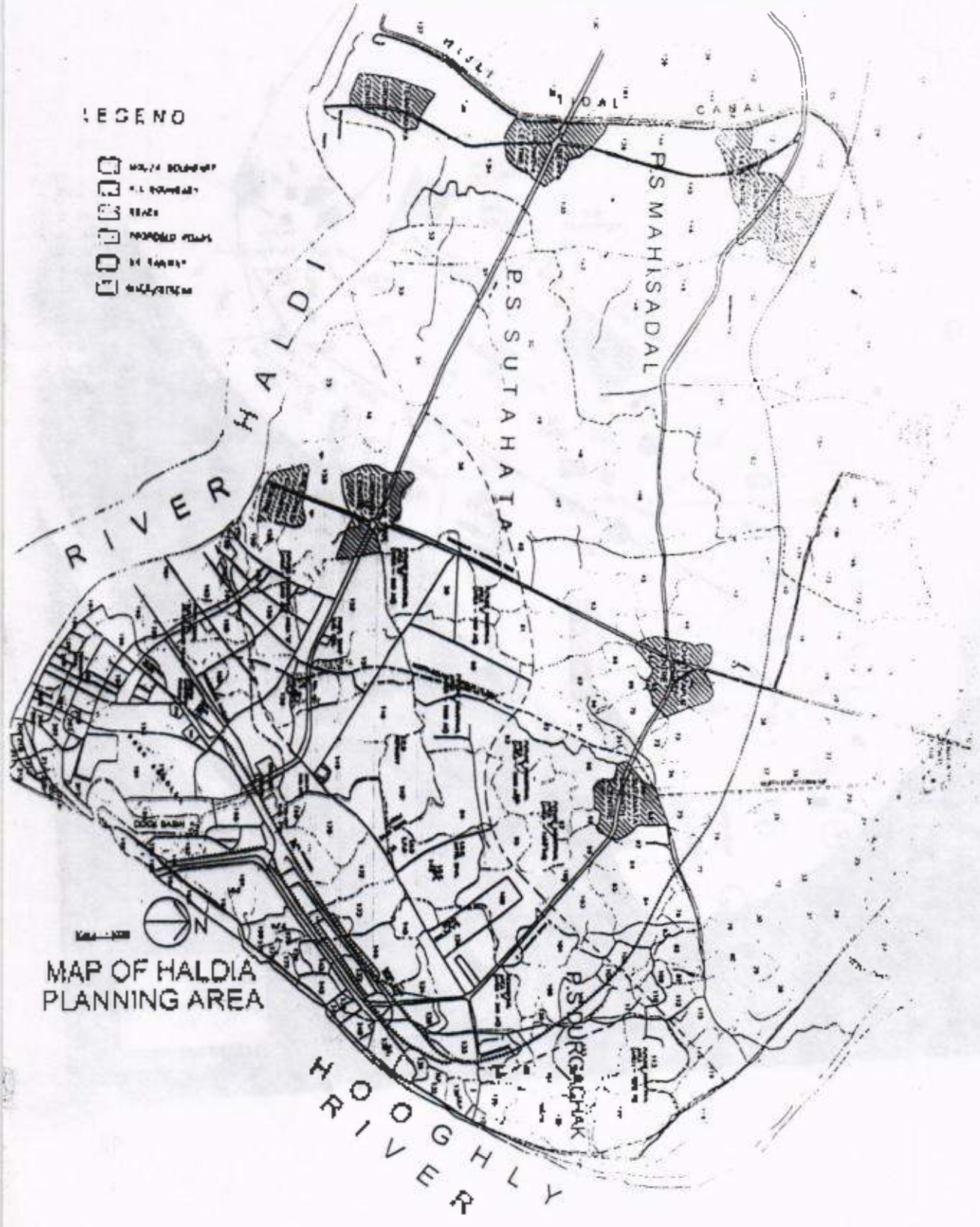
ANNEXURE - 8

HALDIA MAP SHOWING SURROUNDING AREA



ANNEXURE - 9

LIST OF TECHNICAL EXPERTS (Chemical-wise)

Sl. No	Chemical	Contact details of the Technical Expert				
		Name	Address	Telephone No.		Mobile No.
				Office	Residence	
1	Ammonia	J.Sengupta	Sanjana Cryogenic Storages Ltd, Riverside ring road,Durgachak , Haldia. West Bengal-721602			
		A.K.Sahu				
		S.Poddar				
		B.D.Saha				
		T.Chakraborty				
		P.K.Sarkar				
		S.M.Basu				
		S.K.Bandopadhyay	IOCL Haldia refinery,Dist-Purba Medinipur,West Bengal-721606	252362	263435	-
		Dr.T.K.Bhattacharjee		263139 262101	263331	-
		Ashok Sil	Tata Chemicals Limited,P.O.-Durgachak,Haldia,Dist -Purba Medinapur,West Benga - 721602	03224-251023	03224-252223	9434300616
2	Acrylonitrile	Mr. S.K.Ray	Consolidated Fibres and Chemicals Limited, Industrial zone(South East),Haldia,Durgachak,Dist.Midnapore,West Bengal-721602	03224-252490	03224-274658	9332121[illegible]3
		Mr. A.Mukherjee		03224-252490	03224-272346	9832124099
3	AFFF	Anupam	IOCL-Haldia Barauni Crude OilPipeline, Kasberia,PO-Khanjanchak,Dist-Purba Medinipur, West Bengal-721602	03224-275157	03224-224299	-
		Amiya Bhattacharya		03224-275157	03224-264074	9434024926
4	Chlorine, H2, MEK,Toulene, Sulphuric Acid, Naptha	S.K.Bandopadhyay	IOCL Haldia refinery,Dist-Purba Medinipur,West Bengal-721606	252362	263435	-
		Dr.T.K.Bhattacharjee		263139 262101	263331	-

Sl No.	Chemical	Contact details of the Technical Expert				
		Name	Address	Telephone No.		Mobile No.
				Office	Residence	
5	Crude	Anupam	IOCL-Haldia Barauni Crude OilPipeline, Kasberia,PO-Khanjanchak,Dist-Purba Medinipur, West Bengal-721602	03224-275157	03224-224299	-
		Amiya Bhattacherya		03224-275157	03224-264074	9434024926
		S.K.Bandopadhyay	IOCL Haldia refinery,Dist-Purba Medinipur,West Bengal-721606	252362	263435	-
		Dr.T.K.Bhattacharjee		263139 262101	263331	-
6	LPG	Amalesa Datta	IndianOil Petronas Pvt Ltd,Kasberia,P O,Khanjanchak,Haldia,Dist-Purba Medinipur,WB-721602	03224-275797	03224-266570	09434024803
		Sumanto Sen		03224-276382 Ext-141	03224-267851	-
		S.Sridhar		03224-275794	03224-267462	09434050275
		S.K Bandopadhyay	IOCL Haldia refinery,Dist-Purba Medinipur,West Bengal-721606	252362	263435	-
		Dr.T.K.Bhattacharjee		263139 262101	263331	-
		Mr.Asok Guharoy	Exide Industries Ltd,P O,Durgachak,Haldia,Dist-Purba Medinipur,West Bengal-721602	03224-252140	03224-275713	09332312018
7	SKO	S C.Chakraverti, Dy.Mgr(QC)	IBP Co Ltd-Haldia Terminal Vill-Radhamadhavchak,P O-Khanjanchak, Dist-Purba Medinipur, WestBengal-721602	03224-273413	03224-267952	
		A Sengupta, Ops Officer		03224-274545	03224-267428	
8	Propane, Butane, Mercaptan	Amalees Datta	IndianOil Petronas Pvt.Ltd,Kasberia,P.O.Khanjanchak,Haldia,Dist-Purba Medinipur WB-721602	03224 275797	03224-266570	09434024803
		Sumanto Sen		03224-276382 Ext-141	03224-267851	-
		S.Sridhar		03224-275794	03224-267462	09434050275

Sl No	Chemical	Contact details of the Technical Expert				
		Name	Address	Telephone No.		Mobile No.
				Office	Residence	
9	Chlorine	Amalees Dalia	IndianOil Petronas Pvt.Ltd.Kasberia,P O.Khanjanchak,Haldia,Dist-Purba Medinipur.WB-721602	03224-275797	03224-265570	09434024603
		S.Sridhar		03224-275794	03224-257462	09434050275
		Sumanto Sen		03224-276382 Ext-141	03224-267851	-
		S.K.Bandopadhyay	IOCL Haldia refinery,Dist-Purba Medinipur,West Bengal-721606	252362	263435	-
		Dr.T.K Bhattacharjee		263139 262101	263331	-
10	Lead	Mr.Sukati Sen	Exide Industries Ltd,P.O.Durgachak,Haldia,Dist-Purba Medinipur,West Bengal-721602	03224-252140	03224-267384	09434051982
11	Py Gas	Mr. Khusrood, Manager	United Storage and Tank Terminals Limited Opposite BPCL Terminal, Bathikali Dist - Purba Medinipur, West Bengal	03224-253787	9832234637	9434042225
12	MS	Rajesh Kumar, Sr Engineer	United Storage and Tank Terminals Limited Opposite BPCL Terminal, Bathikali, Dist.- Purba Medinipur, West Bengal	03224-253787	-	9932280234
		S.K.Bandopadhyay	IOCL Haldia refinery,Dist-Purba Medinipur,West Bengal-721606	252362	263435	-
		Dr.T.K.Bhattacharjee		263139 262101	263331	-
		Gurpreet Singh Saroa	Reliance Industries Limited. MCS Terminal, H.P.L Link Road, P.O-Debhog, Dist-Purba Midnapore, West Bengal - 721602	313656 305031	-	09332313656
		Partha Sarathi Gupta		310051 305029	-	09332310051
		Prasenjit Chakraborty		305032 309406	-	09332313699
		Rajeeb Lochan Padhi		308033	-	-
		Subhendu Mohapatra		305030	-	09333759176
		Shrikrishna V Puranik		305020	-	-

		S.S.Dasgupta		305019	-	
		Anjan Kumar Das		305032	-	
13	Methylacrylate	Mr. S.K.Ray	Consolidated Fibres and Chemicals Limited Industrial zone(South East),Haldia, Durgachak,Dist Midnapore, West Bengal-721602	03224-252490	03224-274658	09332512713
		Mr. A.Mukherjee		03224-252490	03224-272346	9832124099
14	HSD	Gurpreet Singh Saroa	Reliance Industries Limited, Multipurpose chemical storage Terminal, H.P.L.Link Road, P.O-Debhog, Dist-Purba Midnapore, West Bengal-721602	313656 305031	-	09332313650
		Partha Sarathi Gupta		310051 305029	-	09332310057
		Prasenjit Chakraborty		305032 309406	-	09332313699
		Rajeeb Lochan Padhi		305033	-	-
		Subhendu Mohapatra		305030	-	09333759116
		Shrikrishna V Puranik		305020	-	-
		S.S.Dasgupta		305019	-	-
		Anjan Kumar Das		305032	-	-
		S.C.Chakravarti, Dy.Mgr(QC)	IBP Co Ltd. Haldia Terminal,Vill-Radhamadhavchak,P.O-Khanjanchak, Dist-Purba Medinipur, WestBengal-721602	03224-273413	03224-267552	
		A.Sengupta, Ops.Officer		03224-274545	03224-267428	

ANNEXURE - 10

LIST OF ENVIRONMENTAL LABORATORIES

A. Analytical Laboratories

STD Code : 03224

Sl. No.	Organisation				Name of Contact Person
	Name	*Address*	Tel. No.	*Fax No.*	
01.	M/s R.V. Briggs & Co. Pvt. Ltd.	F-Block, Plot No.12, PO-Durgachak, Purba Medinipur	274058		Shri D.K. Banerjee
02.	M/s Quality Control Laboratory	Haldia Refinery, IOCL, Haldia, Purba Medinipur	252326 23480		Dr. S.K. Mondal

ANNEXURE - 11

List of Transporters

Sl. No.	Name	Telephone Number	Type of Vehicles
1.	Jaymatara Transport, Haldia,Purba Medinipur	03224-252502/ 980	Bus
2.	India Trading Corpn.	03224-274924	
3.	Anirban Transport	03224-252180	
4.	Sourav Transport	03224-272637	
5.	Industrial Service	03224-275201	
6.	G.K.Roadways, Sutahata,Purba Medinipur	03224-281378	Truck & Small Vehicle.
7.	South Bengal State Transport Corporation, Haldia, Purba Medinipur	03224-274439	Bus
8.	District Bus Owners Association, Tamluk, Purba Medinipur	03228-267034	Bus & other Vehicles.
9.	Haldia Tanker Owners' Association, Khanjanchak, Purba Medinipur	03224-272134	Truck
10.	Bus Owners Association, Mechada Station	03228-250265	Bus & other Vehicles
11.	Anjali Transport, Durgachak, Haldia	03224-274287	Bus & other Vehicles

ANNEXURE– 12

LIST OF NGO'S / VOLUNTARY ORGANISATIONS

Sl.No	Name of the N.G.O	Address	Contact Number
1.	Haldia Vigyan Parishad	P.O. Haldia Township	
2.	Vivekananda Mission Ashram	Chaitanyapur, Haldia	
3.	Haldia Service Society	Utsav Bhaban, P.O.Debhog	
4.	Haldia Samaj Kalyan Parishad	P.O.Anatapur, via Sutshata	
5.	Haldia Vigyan Mancha	P.O.Township,Haldia	
6.	Kalyanshree Mahila Samity	Vill-Brajlalchak, P.O.Dakshinachak	

ANNEXURE – 13

Distribution List of Controlled Copies of the Off-Site Emergency Plan

1) District Magistrate, Purba Medinipur
2) Additional District Magistrate
3) Haldia Police Station
4) Police Control Room
5) Regional Transport Office, Haldia
6) S.D.Controller, Food & Supply
7) Public Works Department
8) Superintending Engineer, WBSEB
9) Haldia Fire Station
10) Haldia Development Authority
11) Haldia Municipality
12) Factory Inspectorate
13) West Bengal Pollution Control Board
14) Nodal Hospital – Haldia Sub divisional Hospital
15) Executive Engineer, Water Supply, Haldia (PHE)
16) Haldia Bus Depot
17) Sub-divisional Information & Cultural Officer, Haldia
18) DGM(Telephone), Haldia
19) MAH units

- Bharat Petroleum Corporation Ltd Haldia Installation
- Bharat Petroleum Corporation Tank Wagon Gantry
- Consolidated Fibres and Chemicals Ltd.
- Exide Industries Limited (Export only)
- Haldia Petrochemicals Ltd.
- Tata Chemicals Ltd.
- Hindustan Petroleum Corporation Ltd - Haldia Terminal
- IBP Co. Ltd.
- Indian Oil Petronas Ltd.
- IOCL Haldia Barauni Crude Oil Pipe lines
- IOCL Haldia Refinery
- IOCL Marketing Division
- MCC PTA India Corp. Pvt. Ltd.
- Reliance Industries Ltd. MCS Terminal
- Sanjana Cyrogenic Storages Ltd.
- Shaw Wallace Agro Chemicals Ltd.
- United Storage and Tank Terminals Ltd.

FORMAT OF CHANGE RECORD SHEET

(To be kept in the Master Copy)

Amendment No : _____ Date of Amendment: _____

Revision No _____ Pages to be replaced: _____

Amendment sent to	Acknowledgement Slip Received Back	Remarks

Signature

ANNEXURE – 15

RECORD OF AMENDMENT BY THE HOLDER OF THE PLAN

Date of Amendment	Revision No.	Page Nos. replaced	Date of returning the Acknowledgement Slip to District Collector	Remarks

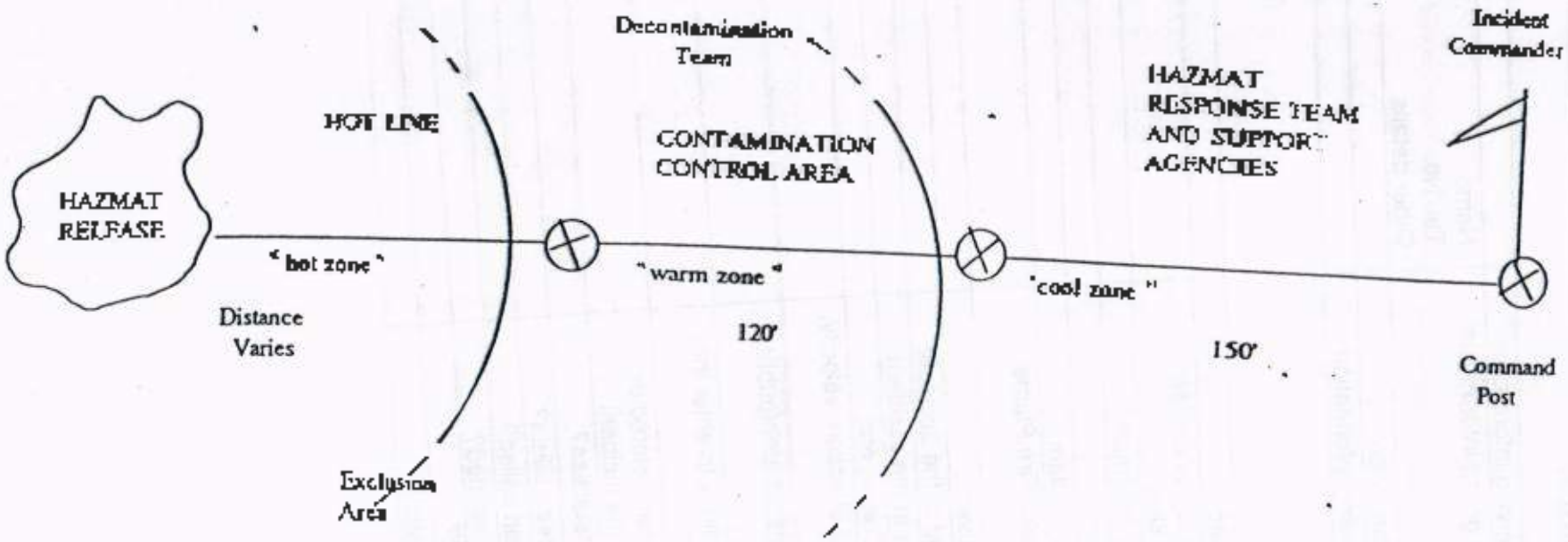
ANNEXURE - 16

FORMAT OF RECORDING INCIDENT INFORMATION SUMMARY

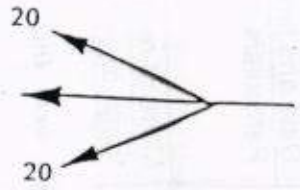
A.	**Receiving the Information**	
1	Date and time of receiving information	
2	Particulars of person giving information:	Name Tel. No. Other details
3.	Mode of receiving information	
4.	Name of person receiving information	
B.	*Incident Information*	
5.	Date and time of incident	
6.	Name and Telephone No. of contact person at the incident site	
7.	Accident location (give landmark)	
8.	Surrounding Population	
9.	Brief description of the incident	
10	Nature of accident (Leak, Fire Plume, Explosion)	
11.	Material/Chemical involved	
12.	Qty. of the matl involved in the accident	
13.	No. of persons involved in the accident	
14.	Characteristic (Smell, Colour, etc)	
15	Weather condition (wind direction, velocity, inversion, etc.)	
16	Distance from any populated area/public place (in metres or Kms.)	
17	Is the escaped material likely to enter into any water course or soil?	
18	Other major hazardous matls stored or handled in the vicinity of the incident	
19	Are there any injuries or fatalities?	
20	Where have the injured been taken?	
21	Have the ambulances been called?	
22	Has the fire brigade been notified?	
23	Have Police been notified?	
24	Any other relevant information	

Distance between release and hotline will vary depending on materials involved

Distance between operational area and command post to be at least 150' depending on the severity of the incident, the materials involved, and the scene characteristics.



Contamination Control Area
Distance between hotline and contamination control line to be at least 120' depending on the severity of the incident, the materials involved, and the scene characteristics



WIND DIRECTION

ZONE MARKING (HOT, WARM and COOL)

ANNEXURE-17

ANNEXURE - 18

LIST OF HOSPITALS

Sl. No.	Name of Hospital/Nursing Home	Address	Contact Person	Telephone Number	Mobile Number
01.	Haldia S.D. Hospital			274108	
02.	C.P.T. Hospital			263265/388	
03.	I.O.C. Hospital			263357/317	
04.	HFC Hospital			263224/376	
05	Haldia Lions Eye Health Care	Research Centre, Durgachak, Haldia		03224-253280	
06.	Netra Niramay Vivekananda Mission Ashram, Chaitanyapur			286357/891/221	
07.	E.S.I. Hospital			274860	
08.	SAB Nursing Home			274718	
09.	Matrik Nursing Home	HPL Link Road,Basudevpur, Haldia		03224-274690	
10.	Medicare Nursing Home			274142	
11.	Pal Nursing Home Girishmore			274222	
12.	Khila Nursing Home			274690	
13.	Portland Nursing Home			277102	
14.	Sudha Nursing Home	Khanjanchak, Durgachak, Haldia		03224-274054	
15.	Haldia Seva Sadan	Devog, Haldia		03224-252162/252987	
16.	Anamika Policlinic Nursing Home	Bhabanipur, Haldia		03224-255911	
17.	Mediland Nursing Home	H.P.L.Link Road, Basudevpur, Haldia		03224-275200	

ANNEXURE– 19

ORGANISATION WHO CAN PROVIDE AMBULANCES

Sl. No.	Organisation	Contact Person		Ambulances		
		Name	Contact No.	Type	Capacity (No. of persons)	No. of Ambulances
1.	Haldia Sub-divisional Hospital, Basudevpur,Purba Medinipur		03224-278112			
2.	I.O.C.Hospital, Haldia Townsip, Purba Medinipur		03224-262101			
3.	KoPT Hospital, Haldia Dock Complex,Haldia Townsnip, Purba Medinipur		03224-262102			
4.	Basulia Rural Hospital, Mahishadal, Purba Medinipur		03220-240243			
5.	Purba Medinipur District Hospital, Tamluk:Purba Medinipur		03228-266059			
6.	Haldia Municipality,City Centre,Haldia, Purba Medinipur		03224-252996			
7.						

ANNEXURE- 20

BLOOD BANKS

Sl. No.	Blood Bank	Address	Contact Person		Facilities Available	Remark
			Name	Contact No.		
1.	Haldia Sub-divisional Hospital Blood Bank	Basudevpore,Khanjanchak,Purba Medinipur		03224-271441		
2.	Purba Medinipur Dist. Hospital Blood Bank	Tamluk, Purba Medinipur		03228-270133		

ANNEXURE – 21

24 HOURS CHEMIST SHOPS

Sl. No.	Name of Chemist shop	Contact Person 1		Contact Person 2		Contact Person 3		Contact Person 4		Remark

PATHOLOGICAL LABORATORIES

STD Code : 03224

Sl. No.	Organisation			Contact Person	
	Name & Address	Tel. No.	Fax No.	Name	Mobile No.
1.	Amardyuti X-Ray Clinic PO & PS- Durgachak, Purba Medinipur	274423		Proprietor- Shri Dhriti Nandan Guru	
2.	Meditab Diagnostic & Polyclinic (P) Ltd. Manjushree Cinema Market Complex, Basudevpur, PS- Durgachak, Purba Medinipur	274596 272581		Smt. Ambu Prabha Sarkar, Managing Director	
3.	Micro Clinical Laboratory Basudevpur, PO- Khanjanchak, PS- Durgachak, Purba Medinipur	273058		Proprietor – Sri Saibal Maji,	
4.	Diagnostic & Day Care Center (Apollo Clinic) Dr. B.R. Ambedkar Bhawan, City Center, Debhog, Haldia, Purba Medinipur	253403/ 04		Sri Manas Mukhopadhyay, Asstt. Mgr. (Marketing)	
5.	Chemico Laboratory Vill-Rampur PO-Chaitanyapur, PS-Sutahata, Purba Medinipur	286108		Proprietor – Sri Biswajit Maity	
6.	Chena Pathological Lab Vill & PO & PS-Sutahata, Purba Medinipur	281141		Proprietor – Sri Gadadhar Mahapatra	
7.	Doctor (Pathological Dept.) Vill & PO-Chaitanyapur, PS-Sutahata, Purba Medinipur	286007		Proprietor – Smt. Lipika Maity	
8.	Shyama Clinical Laboratory Vill & PO-Chaitanyapur, PS-Sutahata, Purba Medinipur	286203		Sri Tarini Kanta Bhowmik	
9.	Modern Clinical Laboratory, Vill-Basudevpur, HPL link Road, PO-Khanjanchak, PS-Durgachak, Purba Medinapur.	275983		Proprietor – Smt. Kabita Das	
10.	Medinova Diagnostic Sevices Center, Durgachak, A Block (Rehabilitation Colony), PO & PS-Durgachak, Purba Medinipur	272551		Partner - Sri Bidhan Chandra Gole	
11.	Pathowind Diagnostic System, C/o. H.R. Mallick, HPL Link Road, PO-Khanjanchak, PS-Durgachak, Haldia Purba Medinipur	276551		Dr. Madhusudan Chakraborty, Pathologist	

12.	Jibanrekha Diagnostic & Research Center (P) Ltd, Vill-Basudevpur, HPL Link Road, PO-Khanjanchak, PS-Durgachak, Purba Medinipur	276570		Sri Udaya Narayan Sinaw, Managing Director	
13.	Life Diagnostic Center Vill-Basudevpur, PO-Khanjanchak, PS-Durgachak, Haldia, Purba Medinipur	275746		Proprietor – Sri Aparna Palai	
14.	Deys X-Ray & Pathological Laboratory Vill. & PO-Chaitanyapur, PS-Sutahata, Purba Medinipur	310855		Proprietor – Smt. Kanan Mukherjee	

Equipment which can be Supplied by Industries

I Spareable in Off-Site Emergency caused due to other units

Sr. No	Name of Industry	Fire Hydrants	Fire Hoses	Fire Engines	Jet Monitors	Foam	SCBA	Vehicles	Fire Extinguishers	Others
1.	Tata Chemicals Ltd.	-	-	01 1#	-		00 4#	Jeep- 1 Nos Car - 2 Nos. Fire Engine-1 No. Ambulance-1 No	-	Fire Pumps- 02 Nos 02 Nos# Foam Monitors- 08 PVC Suits-09 Nos 05 Nos.# Chemical canister masks-17 Nos.(10 Nos#) Rubber Hand Gloves-20 Nos (10#) PVC Suits-9 Nos.(5#)
2.	Shaw Wallace Agro Chemicals Ltd.									
3	IOCL Haldia Barauni Crude Oil Pipe lines	02 1#					06 1#	Jeep-2Nos Car-3 Nos Bus-1 Nos.		Aluminium fire proximity-2 Nos.(1#) Resuscitator-4 Nos (1#) Water jet blankets-2 Nos(1#) Aluminium fire proximity-2 Nos(1#) Rubber hand gloves-6 Nos.(2 Nos.#) Asbestos hand gloves-10 Nos.(2 #) Stretchers-1 Nos.(1#) Safety Helmets-30 Nos (10 #)

1 : 2

Sr. No	Name of Industry	Fire Hydrants	Fire Hoses	Fire Engines	Jet Monitors	Foam	SCBA	Vehicles	Fire Extinguishers	Others
4.	Consolidated Fibres and Chemicals Ltd.					2000 ltrs#	03 2#	Car- 4 Nos.		Fire water-400Cm Foam-20,000 .ts (2000 Ltrs #) PVC Suit-10(5#) Hose Nozzles-10(10#) Ammonia filter canister-08(8#) Hand line foam branch-02(2#) Hose reels-04 Resuscitator-03(3#) PVC/Nitrile Gloves-50 Pairs (20 Pairs#) Aluminized Asbestos sheets-02(2#) Air ose mask-03 Canister Respirators-08(8#)
5.	Exide Industries Limited							Jeep-1Nos Car-2 Nos Bus-1Nos. Ambulances-01		Rubber hand gloves-300 Nos.(200#) Safety Helmets 50 Nos.(25#) Nose Mask-300 Nos.(200#)
6.	Sanjana Cyrogenic Storages Ltd.									
7.	IOCL Haldia Refinery	-	150 50#	-	-	06 3#	1,00,000Lit 12 KL #	Jeep- 10 Nos Ambulance- 4 Nos Truck- 1 Nos	DCP B00(25#)- 200Kg CO(5#)-70 Kg 25(5#)-5 Kg	Foam Tenders-3 (1#) DCP Stock-5500Kg(500Kg #) PVC Suits-50 (5#) Acid Suits-30 (5#) Asbestos Suits-7 (2#) Aluminised Asbestos Suits-7 Nos(2#) Portable O_2 cylinders 2(1#) DCP Skid-1(1#) H_2S Detector-1 No.(1#) Hose Reels-150(50#) Canister Respirators • Acid gas-20(5#) • Alkali Gas-30(5#) • CO-04 Nos.
8.	IBP Co. Ltd.	55	20 5#	03	11	7.2 2# KL	01	Sumo-1No.	DCP 25 (5#)-10 Kg 03 (1#)-25 Kg 06 (2#)-75 Kg CO2 05 (2#)-4.5 Kg 01-6.8 Kg	Hand gloves-4 Pairs

Sr No	Name of Industry	Fire Hydrants	Fire Hoses	Fire Engines	Jet Monitors	Foam	SCBA	Vehicles	Fire Extinguishers	Others
9.	Bharat Petroleum Corporation Ltd -Haldia Coastal Installation				26		01	2 Nos	DCP 90 (10#) – 10 Kg 15 (2#) – 50 Kg CO2 18 (5#) – 4.5 Kg	Double Hydrants-55 Foam Monitors – 26 Foam Trolleys (200 lit) – 5 Rubber hand gloves-4 Sets Stretchers- 2 Nos. Safety Helmets-50(20#)
10.	IOCL Marketing Division						01 01#			Rubber hand gloves-2 (2#) Stretchers-2 (2#) Safety Helmets-120 (50#)
11.	Haldia Petrochemicals Ltd.						1#			Full body suits-10# OV Masks- 10# Face Shields- 10# Hand gloves (PVC,Leather)-20# Pairs Fire tender with crew-1 No.# Fire proximity suit-1 No.#
12	Hindustan Petroleum Corporation Limited, Haldia Terminal		15 5#				1 -	Car-1 Nos	DCP 32 (8#) -10 Kg 6 (2#) – 50 Kg CO2 6 (2#)- 4.5 Kg	Fire Hydrant, Monitor sprinkler, Foam pourer, Fire proxity suits, Universal nozzles, Hand gloves Resuscitators
13.	Indian Oil Petronas Ltd.		191 10#				02 1#	Car- 1 Nos	DCP 50 (8 #)	Resuscitator- 2 Nos 1 Nos# Foam Can-10 Nos.96 Lits (25 Lits#) Rubber hand gloves-4 (2#) Stretchers-2 (1#) Safety Helmets-15 (2#)
14.	MCC PTA India Corp. Pvt. Ltd				7000 Ltrs 1000 Ltrs #		10 1#	Car- 16 Nos Bus- 1 Nos Ambulance- 1 Nos.	CO2 18 (56 Kgsx6 Nos #)-4.5 Kgs DCP 448 (150 Kgs x 2 Nos. #)	Water Tank-5000Ltrs 2500 Ltrs# Hose Reels-1 (1#) Rubber hand gloves-30 (10#) Asbestos hand gloves-15(Heat resistant gloves) 5# Stretchers-2 (1#) Safety helmets-15 (5#)

Sr. No	Name of Industry	Fire Hydrants	Fire Hoses	Fire Engines	Jet Monitors	Foam	SCBA	Vehicles	Fire Extinguishers	Others
15.	Reliance Industries Ltd. MCS Terminal							Jeep – 2 Nos	DCP 10 Kg – 10# 25 Kg – 4# 75 Kg – 2# CO2 4.5 Kg – 6#	RRL Hoses-20# Foam -0.5 KL # Foam Trolly200 Ltrs-1# Foam Trolly250 Ltrs-1# Mobile Monitor -1# First aid boxes-2# Safety Helmets -5# FLP Torches – 1# DCP Powder – 25 Kg#
16.	BPCL-Tank wagon gantry									
17.	United Storage and Tank Terminals Ltd..	12	20	02	08	01 01	02	Jeep-1 Nos.	DCP 22 Nos.(22#) CO2 02 Nos. (2#)	Helmets- 25 Nos Safety shoes-17 Pairs Vajol Mask-10 Nos

List of Communication Equipment in Industries

Sr No.	Name of the Industry	Communications				
		Landline Telephones dedicated for use in emergency.	Hotline	Walkie-Talkie	Wireless /VHE Sets	PA System
01	Tata Chemicals Ltd.	One	-	06	02	• Emergency Siren system
02.	Shaw Wallace Agro Chemicals Ltd					
03.	IOCL Haldia Barauni Crude Oil Pipe lines	One	-	Yes	-	• Electric Sirens- 2 Nos having 11.5 Km diametrical range
04.	Consolidated Fibres and Chemicals Ltd	03224-251101	-	06	-	2 Nos.
05.	Exide Industries Limited	03224-252140	03224-251102	-	-	• Electrically Operated Siren(1/2 Km range) • PA System
06.	Sanjana Cyrogenic Storages Ltd					
07	IOCL Haldia Refinery	P&T-2 Nos Intercom-5 Nos	Centrax system P&T-2Nos	6 Nos	Nil	• Electric operated siren(5 Nos) • Hand operated PA System-1 Nos. • PA System in Ice tenders(2 Nos.)
08.	IBP Co. Ltd.	1 No. P&T - 278115	1 No.(Hot No.35)	4 Nos + Base Station	Nil	• 1 Nos.-AC Electrical power operated Siren(3 Km range) • 1 Nos.-DC power operated Siren(2 Km range) • 1 Nos. Hand operated Siren(1 Km range) • PA System within Terminal premises.
09	Bharat Petroleum Corporation Ltd. Haldia Coastal Installation	6 Nos. P&T Telephone Lines; Intercom- 2 Nos	N/A	10 Nos	N/A	• Siren with 3 Km range

Sr. No.	Name of the Industry	Communications				
		Landline Telephones dedicated for use in emergency.	Hotline	Walkie-Talkie	Wireless /WHE Sets	PA System
10.	IOCL Marketing Division					
11.	Haldia Petrochemicals Ltd.					
12.	Hindustan Petroleum Corporation Ltd, Haldia Terminal	3 Nos.- P&T 14 Nos - EPABX	-	04	-	• Electrical Siren- 5 Km range
13.	Indian Oil Petronas Ltd.	6 Nos.	278104	16 Nos	-	• 1 Nos. PA System- 5 Km range
14.	MCC PTA India Corp. Pvt. Ltd.	278102 275572	278102	30 Nos.	40 Nos.	• Manuel fir alarm siren- 1Km/2.5 Km range(3 Nos) • PA System-10 Km • Explosion proof type manual call points (20 Nos.)
15.	Reliance Industries Ltd. MCS Terminal	Available		Available		• Siren with range upto 3 Km • PA System all across the terminal
16.	United Storage and Tank Terminals Ltd.	03224-263390	-	03	-	• Siren & PA System
17.	Bharat Petroleum Corporation Limited- Tank Wagon Gantry					

ANNEXURE– 25

LIST OF MATERIAL HANDLING EQUIPMENT SUPPLIERS

SOUTH ASIAN PETROCHEM LTD.

Item Code	Item Name	Item Description	Item Quantity and Unit	Specify location if not present at the department	Availability month (Specify)	Transponation Mode (Road Train, Air, Water or NA	Operator Provided (Yes/No/NA)
101.	Gas Cutters		1 No.	Mechanical Workshop			
104.	Electric Drill	½" size	2 Nos.	Mechanical Workshop-1, Elec. Workshop			
115.	Jack 5 ton Lift	Hydraulic	2 Nos.	Mechanical Workshop			
117.	Sledge Hammer		1 No.	Mechanical Workshop			
130.	Crescent/Adjustable Wrenches	12"	15 Nos.	Mechanical Dept. (Technician)			
131.	Slotted Screwdrivers		12 Sets	Inst. & Elec. Technician			
134.	Lifting Tackle – 3 ton		1 No.	Mechanical Workshop			
136.	Aspects Blanket		2 Nos.	Mechanical Workshop			
141.	Electric Generator	125 KVA	2 Nos.	DG & Fire Pump Station			
146.	Cranes – heavy Duty Fork Type	2.0 / 2.5 Tons	15 Nos.	Stores (RMS & FGS)			
168.	Suit – Fire Approach		1 No.	Production Department			
171.	Breathing Apparatus – Self contained		1 No.	Production Department			
175.	Extension Ladder		1 No.	Electrical Department			
177.	CO_2 Type		82 Nos.	Various locations in the plant			
178.	Foam Type		30 Nos.	Various locations in the plant			
179.	DCP Type		28 Nos.	Various locations in the plant			
181.	Fire Tender		1 No.	Inside the Plant Premises			
205.	First Aid Kits		13 Nos.	Various locations in the plant			
221.	Water Tank	$3000m^3$ open storage	1 No.	Inside the Plant Premises			
246	Tarpaulin		2 Nos.	Stores			

Item Code	Item Name	Item Description	Item Quantity and Unit	Specify location if not present at the department	Availability month (Specify)	Transportation Mode (Road, Train, Air, Water or NA	Operator Provided (Yes/No/NA)
101	Gas Cutters		2 Sets	Available inside plant	October'2004	Road	No separate
102	Cold Cutters		1 No.	Available inside plant	October'2004	Road	No separate
104	Electric Drill		3 Nos.	Available inside plant	October'2004	Road	No separate
106	Chipping Hammer		2 Nos.	Available inside plant	October'2004	Road	No separate
115	Jack with 5 ton lift		3 Nos.	Available inside plant	October'2004	Road	No separate
122	Smoke blower and exhauster		3 Nos.	Fixed type	October'2004	Road	NA
124	Gloves Rubber, Tested upto 25,000 volt.		2 Pairs	Available inside plant	October'2004	Road	NA
130	Crescent/adjustable Wrenches		3 Sets	Available inside plant	October'2004	Road	NA
131	Slotted Screwdrivers		3 Sets	Available inside plant	October'2004	Road	NA
134	Lifting tackle – 3 ton		3 Sets.	Available inside plant	October'2004	Road	NA
135	Chains 6 feet (3 ton lift).			Available inside plant	October'2004	Road	NA
143	Bulldozers wheeled/chain	Chain	2 Nos.	Cannot be spared	October'2004	Road	1 No.
146	Cranes heavy Duty, Fork type	Colts, 25 Ton	1 No.	Cannot be spared	October'2004	Road	1 No.
170	Clothing – Chemical Protective (A, B,C)		2 Sets	Available in Chemical Lab	October'2004	Road	NA
171	Breathing apparatus self-contained		2 Sets	Available inside plant	October'2004	Road	NA
175	Extension Ladder		1 No	Available inside plant	October'2004	Road	NA
176	ABC Type		2 Nos.	Available inside plant	October'2004	Road	NA
177	CO_2 Type 6 75 kg.		25 Nos	Available inside plant	October'2004	Road	NA
178	Foam Type		25 Nos.	Available inside plant	October'2004	Road	NA
179	DCP Type		25 Nos.	Available inside plant	October'2004	Road	NA

M/s. PETROCARBON & CHEMICALS COMPANY

Item Code	Item Name	Item Description	Item Quantity and Unit	Specify location if not present at the department	Availability month (Specify)	Transportation Mode (Road, Train, Air, Water or NA	Operator Provided (Yes/No/NA)
[illegible]	Gas Cutter		2 Set	Mechanical	-	NA	NA
104	Electric Drill		2	Electrical	-	NA	NA
105	Chipping Hammer		1	Mechanical	-	NA	NA
109	Pneumatic Chisel		1 Set	Mechanical	-	NA	NA
115	Jack with 5 ton lift						
		Screw	4	Mechanical	-	NA	NA
		Hydraulic	11	Mechanical	-	NA	NA
143	Bulldozers Chain	BMEL	2	Mechanical	-	NA	Yes
145	Earthmovers –						
	Payloaders HM 2021		2	Mechanical	-	NA	Yes
177	CO_2 Type		11	Different location	-	NA	NA
178	Foam Type		5	Different location	-	NA	NA
179	DCP Type		10	Different location	-	NA	NA
222	Water Tank		1100 KL	Plant area	-	NA	NA
255	Mini Bus (School Bus)	TATA 407	1		-	Road	Yes

M/S MANARKSIA LIMITED

Item Code	Item Name	Item Description	Item Quantity and Unit	Specify location if not present at the department	Availability month (Specify)	Transportation Mode (Road, Train, Air, Water or NA	Operator Provided (Yes/No/NA)
101	Gas Cutters	Handset	03 Nos	Aluminium Shed	Jan to Dec. (12 M)	Road	Yes
102	Cold Cutters	Strip Cutter	01No	Aluminium Shed	Jan to Dec. (12 M)	Road	Yes
104	Electrical Drill	Magnetic & Gum	01 No. each	Machine Shop	Jan to Oct. (10 M)	Road	No
106	Chipping Hammer	½ Lbs	05 Nos	Store	Jan. to Dec. (12 M)	Road	No
109	Pneumatic Chisel		01 No.	Store	Jan. to Sept. (9 M)	Road	No
117	Sledge Hammer	10 Lbs.	01 No.	Store	Jan to Dec. (12 M)	Road	Yes
120	Chain tackle	1 ton	01 No.	Machine Shop	Jan to Dec (12 M)	Road	No
122							
130	Adjustable Wr.	18	02 Nos	Aluminium Shed	July to Aug (2 M)	Road	No
131	Slotted Sc. Drr.	18	03 Nos	Aluminium Shed	Jan. to Dec. (12 M)	Road	Yes
134	Lifting Tackle	3 Ton	01 No.	Aluminium Shed	July to Dec. (6 M)	Road	No
140	Search light	3 Cell	03 Nos	Aluminium Shed	Jan to Dec. (12 M)	Road	Yes
141	Electric Gen.	10HP	01 No.	Aluminium Shed	Jan to Dec (12 M)	Road	Yes
146	Crane	5 T Fork, 9T Hyd.	01 No.Each	Aluminium Shed	Jan. to Dec. (12 M)	Road	Yes
173	Pump Portable	Tullup SHP	01 No	Store	Apr to July. (4 M)	Road	Yes
177	CO_2 Type	22.5 kg & 4.5kg	08 & 02 Nos	Aluminium Shed	Jan. to Dec (12 M)	Road	Yes
178	Foam Type	45 Ltr.	04 Nos	Store	Jan to Dec. (12 M)	Road	No
201	First Aid Kit		02 Sets	Store	Jan. to Dec. (12 M)	Road	Yes
221	Water filter	Acua Guard	01 No	Aluminium Shed	Jan. to Dec (12 M)	Road	Yes
256	Mini Bus	16 Seater	01 No	Parking Zone	Jan. to Dec. (12 M)	Road	Yes
276	Mobile Phone	GSM	05 Sets	Person	Jan to Dec (12 M)	Road	Yes
282	Camera	Digital	01	Person	Jan. to Dec (12 M)	Road	Yes

M/s. MCC PTA INDIA CORPN LTD.

Item Code	Item Name	Item Description	Item Quantity and Unit	Specify location if not present at the department	Availability month (Specify)	Transportation Mode (Road, Train, Air, Water or NA	Operator Provided (Yes/No/NA)
101	Gas Cutters	-	02	Mechanical	Always	Road	N/A
102	Cold Cutters	-	12	Mechanical	Always	Road	N/A
103	Bolt Cutters	-	01	Mechanical	Always	Road	N/A
104	Electric Drill	-	04	Mechanical	Always	Road	N/A
109	Chisel	Pneumatic	01	Mechanical	Always	Road	N/A
110	Cutters	Hydraulic	01	Mechanical	Always	Road	N/A
115	Jack	5 Ton lift	01	Mechanical	Always	Road	N/A
117	Sledge Hammer	-	06	Mechanical	Always	Road	N/A
120	Chain tackles	-	03	Mechanical	Always	Road	N/A
122	Smoke Blower	Electric driven	04	Mechanical	Always	Road	N/A
123	Set of rope tackle	(3 Sheeve)	08	Mechanical	Always	Road	N/A
134	Lifting tackle	3 Ton	06	Mechanical	Always	Road	N/A
135	Chains –6 feet	3 Ton	02	Mechanical	Always	Road	N/A
137	Seeking Lot	10mt. Length	-	Mechanical	Always	Road	N/A
142	Trucks	Aerial lift	2 Nos.	Mechanical	Always	Road	N/A
146	Cranes	Heavy duty Fork type	01 No	Mechanical	Always	Road	N/A

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ANNEXURE 20

CONTACT DETAILS OF MEDIA

Name	Newspaper	Address 1	Address 2
Shri Subrata Guha.	Ananda Bazar Patrika,	Tamluk DTO Office	Dist. Purba Medinipore
The Editor,	Ananda Bazar Patrika,	6 & 8, Prafulla Sarkar Street,	Kolkata - 700001
Shri Ashoke Bera,	Pratyahik Sambad,	Tamluk DTO Office	Dist. Purba Medinipore
The Editor,	Pratyahik Sambad,	9, Manidra Mitra Road	Kolkata - 700009
Shri Ananda Mondal.	Aajkal	Tamluk DTO Office	Dist Purba Medinipore
The Editor,	Aajkal	98, Raja Rammohan Sarani,	Kolkata - 700009
Shri Chanchal Pradhan	Pratidin,	Daserchak (Near Temple), P.O. Haldia port,	Dist. Purba Medinipore
The Editor,	Pratidin,	20, Prafulla Sarkar Street,	Kolkata - 700072
Shri Biswajit Sana,	Bartaman,	Opp. LIC Office, Hari Bazar, Tamluk,	Dist. Purba Medinipore
The Editor,	Bartaman,	76, A J.C. Basu Road	Kolkata - 700014
Shri Gundadhar Samanta,	Ganashakti,	CPI (M) Party Office	Mirbazar, P.O. + Dist. Pachim Medinipore
Shri Shyamal Sen	Ganashakti,	Sramik Bhawan, Chiranjibpur, Haldia,	Dist. Purba Medinipore
The Editor,	Ganashakti,	74/A, A J.C Basu Road,	Kolkata - 700016
Shri Atanu Mitra,	Kalantar,	Sujaganj,	P.O + Dist Pachim Medinipore
The Editor,	Kalantar,	30/6, Jhautala Road,	Kolkata - 700017
Shri Biswa Brata Goswami,	The Asian Age,	Kshudiram Nagar	P.O. + Dist. Pachim Medinipore
The Editor,	The Asian Age,	Saket building, 2, Hochimin Sarani,	Kolkata - 700071
Sri Amitava Das.	The Statesman,	C/o – Manmotha Mistri, Block-C, Durgachak Colony,	P.O Durgachak, Dist Purba Medinipore.
The Editor,	The Statesman,	4, Chowringhee Square,	Kolkata - 700001
The Editor,	The Telegraph,	6, Prafulla Sarkar Street,	Kolkata - 700001
Sr Naresh Jana.	The Telegraph,	Rabindrapally, P.O. Hizli,	Dist. Pachim Medinipur – 721306 Tel 03222 - 279742

The Editor	Business Standard Ltd.,	Saraf Building, 3rd Floor, 4/1, Red Cross Place,	Kolkata - 700001
Shri Ashesh Banerjee	Business Standard Ltd.,	Saraf Building, 3rd Floor, 4/1, Red Cross Place,	Kolkata - 700001
The Editor,	The Economics Times.	105/7A, S.N. Banerjee Road,	Kolkata - 700014
The Editor,	The Financial Express,	8, C.R. Avenue, Bank bhawan (3rd Floor),	Kolkata - 700072
Sri Indronil Roy Chowdhury,	The Times of India,	Haldia	Dist Purba Medinipore,
The Editor,	The Times of India,	105/7A, S.N. Banerjee Road,	Kolkata - 700014
Sri Kingshuk Gupta	Coal Field Times,	Raghunathpur, P.O. Jhargram,	Dist Pachim Medinipur
Sri Ranabir Roy Chowdhury, (Chief of Bureau)	Hindu Business Line,	11, Govt. Place East,	Kolkata – 700069 Fax – 033 2485219
Sri Santanu Sanyal, (Logistic Editor)	Hindu Business Line,	11, Govt. Place East,	Kolkata – 700069 Fax – 033 2485219
Sri S Dasgupta (Regional Manager)	The Hindu,	11, Govt. Place East,	Kolkata – 700069 Fax – 033 2485219
Sri Partha Ghosh, (Assistant Regional Manager)	The Hindu,	11, Govt. Place East,	Kolkata – 700069 Fax – 033 2485219
Sri Rakeeb Hossain, (Staff Writer),	The Hindustan Times,	50, Chowringhee Road	Kolkata – 700 071 Fax 033 282 7854
Sri Subhadyudi Dutta, (Reporter)	Satyajug,	1/1-A, 13 Prafulla, Sarkar Street,	Kolkata – 700072. Fax 033 2365788
The Editor,	Chhapte Chapte,	26C, Creek Row,	Kolkata – 700014
Shri Soumeswar Mondal	Khas-Khabar,	8/30, Singha Compound, Keranitala, Station Road.	Dist – Pachim Medinipore.
Shri Amit Mukhopadhyay,	Khas-Khabar,	8/30, Singha Compound, Keranitala, Station Road,	Dist – Pachim Medinipore.
The News Coordinator,	Khas-Khabar,	85A, Prince Anwar Shah Road.	Kolkata –700 029
Shri Sujit Bhowmik,	E TV.,	Basulia, Mahishadal,	Dist. Purba Medinipore - 721628
The News Coordinator,	E.TV.,	3, Chowringhee Square,	Kolkata –700 072
Shri Jahangir Badsa,	Akash Bangla,	Vill-Santipur, P O-Mecheda, P.S-Kolaghat	Dist-Purba Medinipore (03228) 249057 9434005447
Shri Tapas Ghosh,	Zee News,	CPT Guest house, Cluster -4, Haldia,	Dist – Pachim Medinipore.
The News Coordinator,	Zee News,	Kolkata	Fax-(033) 4638943

The News Coordinator,	Tara News,	2, Camac Street,	Kolkata – 700 016
Shri Rajib Chakraborty,	Khabarar Kage (Cignus News),	Vill-Bansda, P.S. Kolaghat	Dist. Purba Medinipore (03228) 259449
Smt. Sulagna Maity,	ATN World (Cignus News),	48, Chhotobazar,	P.O.+Dist. Pachim Medinipore Fax-(033) 2261185
The News Coordinator,	ATN World (Cignus News),	Kolkata	
The News Coordinator,	Khabor Akhon,	Sukriti Production Pvt. Ltd., 36/2, South End Park,	Kolkata – 700029 (Fax – 464 8499)
The News Coordinator,	Star TV,	Kolkata	Fax – (033) 4646010
The News Coordinator,	Ai'a Bangla,	Kolkata	Fax – (033) 2463416
The News Coordinator,	Doordarshan,	Kolkata	Fax – (033) 4832015
Smt. Manika Das,	Radio Correspondant,	B-15, Sector-8 HFC Township,	Dist. Purba Medinipore
Shri Naresh Das,	P T I.,	B-15, Sector-8, HFC Township.	Dist. Purba Medinipore
Smt. Tamalika Seth,	Apanjan,	Chiranjibpur, Haldia,	Dist. Purba Medinipore
Smt. Satyendranath Nayek,	Press Club Times,	Sutahata, Haldia	Dist. Purba Medinipore
Miss Upama Sinha,	Haldia,	Chaitanayapur, Haldia,	Dist. Purba Medinipore
Shri Manika Das	Takmina	B-188, Sector-8, HFC Township	Dist. Purba Medinipore
Smt. Lipika Bhattacharya,	Sangbadiker Kalam,		
Shri Birendranath Maity,	Shilpa Bandar,	Debhog High School,	P.O. Debhog, Haldia.
Shri Subrata Chakraborty	Prekshapat,	Mahishadal Super Market, C/o Mahamaya Mudrani, 1st Floor,	P.O. Mahishadal Dist. Purba Medinipore
Shri. Jawaharlal Bera,	Parwana,	Chaitanyapur, Haldia	Dist. Purba Medinipore
Shri Asim Maity,	Anko Alo	Chakdwipa,	Dist. Purba Medinipore
Shri C.R. Kundu,	Pragiq	Tamluk,	Dist. Purba Medinipore
The Editor,	Tamralipta Patrika,	Tamluk,	Dist. Purba Medinipore
Sri S.N. Singh,	Prabhat Khabar, (Hindi Daily Kolkata),	Qr. No. A-71, Sector –13, Haldia Township.	Dist. Purba Medinipore
Shri Manoj Roy,	Dainik Chetana,	Parbatipur, Tamluk (Near Town School),	Dist. Purba Medinipore (Phone-03228-267765)

Shri Mangla Prasad Roy.	Hindustan Times,	32, Bidhan Nagar (East)	P.O. + Dist. – Pachim Medinipore.
Shri.Kumaresh Ghosh	The Telegraph	Lalkuli, Bidhan Nagar.	Dist-Paschim Medinipore

ENCLOSURE XVIII: TSDF AGREEMENT

पश्चिमबङ्ग पश्चिम बंगाल WEST BENGAL AA 436875

SERVICE AGREEMENT

This Service Agreement ('Agreement') is made at Haldia on this 1st day of July , 2018, between; IRC Agro Chemicals Pvt Ltd having its registered office at Emerald House, 4th floor, 1B Old Office Street, Kolkata -700001 represented by its G.M.Production, (hereinafter referred to as "the Generator" which expression unless repugnant to the subject or context thereof, shall include its administrators, successors and permitted assigns) as Party No.1

AND

M/s. WEST BENGAL WASTE MANAGEMENT LIMITED, Company registered under the Companies Act, 1956 and having its registered office at Jindal Towers, Block – A, 4th Floor, 21/1A/3, Darga Road, Kolkata – 700017 (hereinafter referred to as "the Operator" which expression unless repugnant to the subject or context thereof, shall include its administrators, successors and permitted assigns) as Party No.2

The Generator and Operator hereinafter individually referred to as 'Party' and collectively as 'Parties'.

WHEREAS;

A. The Operator is engaged in the business of Waste Management and presently operating 'Integrated Common Hazardous Waste Treatment Storage Disposal Facility' at JL-103, Mouza – Purba Srikrishnapur, P.S. Sutahata, Haldia - 721635 under its control (hereinafter called "TSDF"), as per the guidelines under Hazardous & Other Waste (Management & Transboundary Movement) Rules, 2016 and amendments thereof, and as per the authorization of West Bengal Pollution Control Board (WBPCB).

B. The Generator being desirous of availing the services of collection, transport, treatment, storage and disposal of hazardous wastes (hereinafter referred to as "Waste") generated at their premises (here in after more fully described) approached Operator and the same has been accepted by Operator on the terms and conditions set out in this Agreement read with the provisions of Hazardous & Others Waste (Management & Transboundary Movement) Rules 2016, as amended from time to time and supervision of the WBPCB.

NOW THEREFORE in consideration of the above-mentioned premises and the mutual promises contained herein, the Generator and Operator have agreed to enter into this Agreement under the terms and conditions set forth hereinafter.

1. DEFINITIONS AND INTERPRETATION

1.1 **Definitions**: In this Agreement, including in the recitals hereof, the following words, expressions and abbreviations shall have the following meanings, unless the context otherwise requires:

a. "Agreement" means this agreement including all attachments, annexure or schedules annexed thereto.

b. "Hazardous Rules" means Hazardous & Other Waste (Management & Transboundary Movement) Rules, 2016 as amended from time to time.

c. "WBPCB" means West Bengal Pollution Control Board.

d. "TSDF" means the Integrated Common Hazardous Waste Treatment Storage Disposal Facility operated by Operator pursuant to the Consent for Operation No. 96/2S(CON)-2316/2008 dated 04.03.2016 under Section 25 & 26 of the Water (Prevention and Control of Pollution) Act, 1974, under Section 21 of Air (Prevention and Control of Pollution) Act, 1981 and Authorisation under the Provisions of Hazardous & Other Waste (Management & Transboundary Movement) Rules, 2016.

e. "Waste" means hazardous waste generated in the premises of the Generator.

1.2 **Interpretation**: In this Agreement, unless the subject or context otherwise requires:

a. reference to the singular number shall include references to the plural number and vice-versa;

b. references to a "person" shall include references to natural persons, partnership firms, companies, bodies corporate and associations, whether incorporated or not or any other organization or entity including any governmental or political sub-division, ministry, department or agency thereof;

c. references to recitals, clauses and schedules / annexure are to recitals, clauses and schedules to this Agreement;

d. any reference herein to a statutory provision shall include such provision, as is in force for the time being and as from time to time, amended or re-enacted in so far as such amendment or re-enactment is capable of applying to any transactions covered by this Agreement.

e. Clause headings used herein are only for ease of reference and shall not affect the interpretation of this Agreement.

1.3 The Schedules / Annexure shall form an integral part of this Agreement.

1.4 All capitalized terms used in this agreement which have not been specifically defined in this Agreement shall, unless inconsistent with the context have the meanings assigned to them under the Authorisation Agreement.

2 SCOPE OF SERVICES

2.1 The scope of services to be provided by Operator under this Agreement shall be collection, transportation, treatment, storage and disposal of Waste generated at the premises of the Generator located at IRC Agrochemicals Pvt Ltd, Durgachak, Haldia('Premises').

2.2 It is agreed between the Parties that Operator shall provide the above services to the Generator through the TSDF operated by Operator and located at J.L. No 103, Mouza – Purba Srikrishnapur, P.S. Sutahata, Haldia - 721635.

2.3 Operator shall dispose the Waste as per the mandate of the WBPCB read with the provisions of Hazardous Waste Rules.

2.4 Operator also agrees to accept even non-hazardous wastes from the Generator provided that the WBPCB issues 'no objection'.

3 GENERAL CONDITIONS

3.1 The Generator shall immediately upon execution of this Agreement, become registered member of Operator by paying a Lifetime membership deposit of Rs.300000/-(Rupees Three Lacs Only) .The lifetime membership deposit is adjustable against waste disposal charges only, in the event either party decides to terminate this Agreement. Deposit will be applicable for a minimum period of five (5) years from date of signing the Agreement. No Financial Charges are applicable on the membership deposit collected by Operator. Generator is also liable to pay a refundable security deposit to Operator. The security deposit shall be equivalent to minimum of three (3) month average waste disposal user charges.

3.2 The Generator shall provide to Operator, a sample of the Waste and inform the entire process details which leads to generation of such Waste, for the purpose of determining the Waste characteristics and to decide parameters for comprehensive analysis, as well as its final pathway of treatment, storage and disposal of the Waste.

3.3 Operator shall carry on the comprehensive analysis of the Waste in its laboratory at the cost of the Generator, as per the parameters identified under Annexure 1. The comprehensive analysis report shall be used by Operator to determine the disposal pathway based on the waste characteristics & as per Ministry of Environment & Forests (MoEF), CPCB (Central

Pollution Control Board) and the concerned WBPCB rules and guidelines issued from time to time. Disposal pathway shall be mutually agreed between the Generator & Operator and shall form basis for disposal and user charges.

3.4 Operator on receipt of information from the Generator shall plan and schedule for collection of the Waste from the Generator Premises and the safety during transportation shall be the collective responsibility of the Generator and the transporter.

3.5 The Generator shall provide the details of Waste to Operator as mentioned below:

i) complete details of the Waste and its characteristics regarding presence of explosive/ ignitable/ corrosive/ toxic/ odorous compounds in the manifest provided to the transporter for safe transportation and disposal.

ii) Safety information in 'Form 8', 'Waste transportation manifest' in 'Form 10' and TREM Card in 'Form 9' for every Waste type as per Hazardous Waste Rules.

3.6 Operator shall analyze the Waste received through finger print analysis as per the parameters identified under Annexure II as prescribed by the concerned WBPCB.

3.7 In the event there are any differences in the analysis results of comprehensive analysis and finger print analysis, the Generator may either accept the results of Operator or send their samples to a mutually agreed third party analysis at their own cost. Any discrepancy in relation thereto shall be informed to the WBPCB.

3.8 The Generator shall provide a fresh comprehensive analysis report when there is a change in the waste characteristics, manufacturing processes, changes in product mix or upon completion of two (2) years whichever is earlier.

3.9 In the event of any false information or withholding information, all the liabilities, whether directly or indirectly arising there from, during transportation, handling, treatment & disposal shall be the responsibility of the Generator.

3.10 The Generator shall provide an advance declaration every year in the month of April assuring quantity of Waste they would be sending to Operator till March 31 of the succeeding year, in the format provided under Annexure III, Declaration.

3.11 The Generator shall also declare Waste quantities on a annual and/or monthly basis as per Hazardous & Other Waste (Management & Transboundry Movement) Rules, 2016 in the format provided under Annexure III.

3.12 Operator agrees to provide its containers available at its TSDF to the Generator provided the Generator pays the container maintenance charges to Operator as per Annexure IV.

3.13 The Waste supplied by the Generator shall not contain any kind of nuclear and/or radio active and/or any other prohibited material.

3.14 Operator shall also supply specially designed containers to help segregate the Waste and arrange the transportation of such containers from the Generator premises.

IRC Agrochemicals

4 USER CHARGES & TERMS OF PAYMENT:

4.1 The Generator shall pay monthly user charges to Operator for its services as per the slab mentioned under Annexure IV, which shall be based upon the Declaration given by the Generator as provided under Annexure III.

4.2 All taxes including Service Tax, Central Excise, VAT, Octrai, Toll tax etc. shall be paid as extra over and above our quoted rates at the rate applicable, if any, at the time of billing. Tax Laws are subject to amendments from time to time and accordingly any tax will be applicable, will be charged as extra. Service tax is like any other indirect tax to be collected by the WBWML from the Generator and the same is remitted to the government account.

4.3 5% escrow deposit would be charged for the landfill, landfill after treatment waste over and above the disposal charges as may become applicable from time to time as per MOEF notification.

4.4 The user charges are subject to annual revision on the basis of Govt. of India wholesale price index and including but not limited to every event of escalation of fuel costs, power tariff, change in disposal technologies and/or method, wage hike and others.

4.5 Operator shall send the monthly user charges invoice to the Generator on or before 5th of every succeeding month and the bill amount shall be payable by the Generator on or before 5th of the subsequent month.

4.6 Any dispute in the invoice of user charges shall be intimated to the Operator within seven days of receipt of the bill, failing to which shall be treated as final.

4.7 In case of delayed payments the Generator shall be liable to pay interest at the rate of 2% per month on the outstanding amount during the default period. In the event of any bill amount along with interest is due for more than three (3) months, Operator reserves the right to refuse to extend its services to the Generator and even to terminate this Agreement with immediate effect.

5 TERM OF AGREEMENT

This Agreement shall be valid for a period of Three (3) years effective from 1st day of July 2018 subject to earlier termination by either party in accordance with this Agreement.

6 FORCE MAJEURE

Notwithstanding anything else contained herein, neither Party hereto shall be liable for damages or to have this agreement terminated for any delay or default in the performance of such Party hereunder if such delay or default in performance derives from conditions beyond the reasonable control of such Party, including but not limited to, acts of god, strikes, fires, floods, extreme drought, shortage of supply, riots, work stoppages, embargoes, governmental actions or damage to the plant or facility or any cause unavoidable or beyond the control of either party including any arbitrary ruling by the Government prohibiting the handling of the Waste or continuing domestic or international problems such as wars or insurrections.

7 INDEMNITY

The Generator do hereby indemnify, keep indemnified and hold harmless the Operator, its representatives, nominees and officers (including without limitation, reimbursement of any loss suffered by Operator and / or its officers, directors, employees, agents or affiliates and their legal costs), awards, damages, losses and / or expenses, either pecuniary or non-pecuniary in nature, arising directly or indirectly, whether during collection or transportation or treatment or storage or disposal, as a result of:

a) the Waste supplied by or collected from the Generator in case of any mismatch of waste from trem card or finger prints; and any non-disclosure or wrong disclosure of any information as to the characteristic of waste, or

b) any civil or criminal proceedings or liability under any law for any unlawful dumping of untreated wastes by the waste Generator either at the project site of Operator or anywhere else.

8 EVENTS OF DEFAULT

The following shall constitute Generator's events of default:

a. If the Generator fails / refuses to pay its bills / dues for the user charges payable under this Agreement.
b. If the Generator fails / refuses to pay within the time stipulated the advance amounts and deposits etc. called upon to do so by Operator.
c. If the Waste supplied by the Generator contains any radio active or prohibited material.
d. If the Generator commits gross violation of the terms of this agreement.

9 TERMINATION

9.1 The Operator shall have the right to terminate this Agreement immediately in case of Generator's failure to rectify any of the events of default within fifteen (15) days from the date of receipt of notice for rectification from the Operator.

9.2 Either party shall have the right to terminate this Agreement in the event of violation of any of the terms and conditions as agreed upon in this Agreement or otherwise, upon giving thirty (30) days written notice to the other party.

10 ENTIRE AGREEMEENT

This Agreement shall be deemed to represent the entire Agreement between the parties hereto regarding the subject matter hereof and shall supersede, cancel and replace any and all prior agreements or arrangements, (either oral or written) if any, in this behalf, by and between the Parties hereto.

11 RELATIONSHIP OF THE PARTIES

Nothing contained herein shall be deemed to constitute a partnership, joint venture or agency by and between the Parties hereto.

IRC Agrochemicals Pvt. Ltd.

12 AMMENDMENTS

This Agreement may be modified or amended only by writing, duly executed by or on behalf of the Parties hereto. This also applies to a waiver of the written form.

13 SEVERABILITY

All stipulations contained in this Agreement shall be so constructed as not to infringe the provisions of any applicable law. In the event that any provisions of this Agreement is held to be illegal, invalid or unenforceable under any present or future laws of the Republic of India such provisions shall be deemed terminable and the remaining parts & provisions of this Agreement shall remain in full force & effect.

14 NOTICES

14.1 Any notice, request, demand or other communication given or made under or in connection with the matters contemplated by this Agreement shall be in writing and shall be delivered personally or sent by registered post acknowledgement due or by facsimile or by courier:

*In case of **GENERATOR** to:*

Attn:

*In case of **OPERATOR** to:*

Attn: PROJECT IN-CHARGE
West Bengal Waste Management Ltd
JL-103, Mouza – Purba Srikrishnapur, P.S. Sutahata, Haldia - 721635

and shall be deemed to have been duly given or made as follows:-

(a) If personally delivered, upon delivery at the address of the relevant Party;
(b) If sent by registered post-acknowledgement due seven (7) days after the posting;
(c) If sent by facsimile upon receipt of confirmation by sender, from the receiver, that the facsimile has been received;
(d) If sent by courier four (4) days after the date of dispatch.

14.2 A Party may notify the other Party of a change to its name, relevant addressee or address number for the purposes of Cause 14.1 as provided herein.

15 DISPUTE RESOLUTION

Any dispute arising on any clause or clauses of this Agreement and the contents of the Annexure, hereto between the Generator and Operator shall be referred to Arbitration in accordance with the provisions of the Arbitration and Conciliation Act, 1996. The arbitration proceedings shall be conducted in English and the seat of arbitration shall be at Hyderabad. The arbitral award shall be final and binding upon both the Parties. No Party shall make the contents of the award public unless upon the written approval of the other Party.

IRC Agrochemicals Pvt Ltd INDORAMA

16 JURCIDICTION OF COURTS / APPLICABLE LAW

Operator and the Generator mutually agree that the courts of law at Hyderabad / Kolkata shall have the exclusive jurisdiction over all the disputes arising out of this Agreement.

For IRC Agrochemicals Pvt Ltd

Name: C.S.Prasad
Designation: G.M.Production

In the Presence of

Name: Biplab Majumdar
Designation: AGM- Technical services & Environment

For **WEST BENGAL WASTE MANAGEMENT LTD**

Name: SNEHANGSHU CHAKRABORTY
Designation: Project In-Charge

In the Presence of

Name: ANUP SAHOO
Designation: Sr. Executive

IRC Agrochemicals Pvt Ltd ADDANKI

ANNEXURE I

Parameters to be analyzed for Comprehensive analysis of WASTE:

a. Physical State: (Liquid/ Slurry/ Sludge/ Semi-solid/Solid: Inorganic, Organic, Metallic)

b. Different Phases: (in cases of Solid / Slurries / Sludge) contained in aqueous liquids/solutions

c. Colour and Texture

d. Specific Gravity

e. Viscosity

f. Calorific Value

g. Flash Point

h. % Moisture content (Loss on ignition at 105oC)

i. % Organic Content (Loss on ignition at 550oC)

j. Paint Filter Liquid Test (PFLT)

k. PH

l. Sulphur (elemental)

m. 24 hour Leaching Procedure

n. Reactive Cyanide (PPM)

o. Total Cyanide

p. Reactive Sulphide (ppm)

q. Sulphur elemental

r. Concentration of individual inorganics (Metals), both total and leachable, specific parameters to be determined based on source of waste

s. Oil and Grease

t. Extractable Organics

u. % Carbon, % Nitrogen, % Sulphur, % Hydrogen

v. Concentration of Individual Organics

IRC Agrochemicals Pvt. Ltd. RUDRAPUR

w. TCLP for identified parameters

ANNEXURE II

Parameters to be analyzed for Finger Print Analysis:

a. Physical State of the WASTE

b. Identification of different phases of WASTE

c. Colour and Texture

d. Specific Gravity

e. Viscosity

f. Flash Point

g. % Moisture content (Loss on ignition at 105°C)

h. % Organic Content (Loss on ignition at 550°C)

i. Paint Filter Liquid Test (PFLT)

j. Liquid Release test

k. pH

l. Reactive Cyanide (PPM)

m. Reactive Sulphide (ppm)

IRC Agrochemicals Pvt. Ltd.

ANNEXURE III

DECLARATION

We, IRC Agrochemicals Pvt Limited, Durgachak, Haldia hereby declare that based on our industry production and our annual projections we shall be disposing the following Hazardous Waste types to Operator. (Additional sheets could be used for multiple waste types)

- The Avg. Yearly generation of Hazardous Waste is expected as follows.

  1. Avg. 20 MT per year of Spent catalyst (powder/lumps) type of Hazardous WASTE
  2. Avg 20 MT per year of Mixed acidic sludge type of Hazardous WASTE
  3. Avg 200 MT per year of Effluent treatment plant type of Hazardous WASTE
  4. Avg 20 MT per year of discarded asbestos sheet

- Avg. monthly generation of Hazardous Waste is expected as follows.

  1. Avg.1.60 MT per month of Spent catalyst type of Hazardous WASTE
  2. Avg1.60 MT per month of Mixed acidic sludge type of Hazardous WASTE
  3. Avg 15 MT per month of Effluent treatment plant sludge type of Hazardous WASTE
  4. Avg 1.60 MT per month of Asbestos sheet type of Hazardous WASTE

- The Total accumulated/stored/buried in pits Hazardous Waste from the period of ..... '20..... is approximately as follows which is being sent to disposal at WBMWL.

  5. Avg. _____ MT per year of _____ type of Hazardous WASTE
  6. Avg. _____ MT per year of _____ type of Hazardous WASTE
  7. Avg. _____ MT per year of _____ type of Hazardous WASTE

FOR IRC Agro Chemicals Pvt Ltd

Authorized Signatory
Generator, The Second Part

Witness : Name :Arun Kumar Mondal Sign: Arun Kumar Mondal
Company/Occupation :IRC Agrochemicals Pvt Ltd/Service
Designation : Manager- Environment

11

IRC Agrochemical

Witness : Name : Biplab Mujumdar Sign: Biplab Majumdar.
Company/Occupation: IRC Agrochemicals Pvt Ltd/Service
Designation :AGM- Technical services & Environment

ANNEXURE IV

Membership Deposit & USER Charges Details: to avail CHW-TSDF services.

1) Membership Deposit *:

A lifetime initial registration amount has to be paid by the GENERATOR.

The following matrix shall help GENERATOR determine the payable amount as applicable.

Capital Investment [Rs.]	Membership Deposit (Rs.)	
	RED	ORANGE
0 – 2 Lakhs	Rs. 2,000/-	
2 – 5 Lakhs	Rs.5,000/-	
5 – 25 Lakhs	Rs.10,000/-	
25 - 60 Lakhs	Rs.20,000/-	
60 Lakhs – 1 Crore	Rs.35,000/-	Rs.25,000/-
1- 5 Crores	Rs.75,000/-	Rs.35,000/-
5 – 10 Crores	Rs.1.00 Lakh	Rs.40,000/-
10 – 50 Crores	Rs.1.50 Lakhs	Rs.50,000/-
50 – 100 Crores	Rs.2.00 Lakhs	Rs.75,000/-
100 – 200 Crores	Rs.3.00 Lakhs	Rs.1.00 Lakhs
> 200 Crores	Rs.5.00 Lakhs	Rs.1.50 Lakhs

* Security Deposit shall be applicable if Avg. Monthly Waste Disposal User Charges are higher than the applicable Membership Deposit and shall be equivalent to minimum of Three month of Avg. Waste Disposal User Charges.

Note: This deposit is adjustable against waste supply in the event, members desire to withdraw membership or as per Clause in Agreement. .

2) User Charges:

The GENERATOR shall pay the following applicable User Charges based on the Waste Types.

a) **Direct Landfill: per MT**

Direct disposal into Landfill : Rs. 2460.00/- per MT

b) **Stabilization Charges: per MT**

Cost of Direct Land filling (1+Bulking Factor) + Cost of Stabilization Reagents + Rs.350.00 per MT for re-handling expenses.

IRC Agrochemicals P. Ltd. ROORKEE

The GENERATOR has to pay a minimum monthly service charge of **Rs. 500/-** (if Capital Investment <25 Lakh) or **Rs. 1000/-** (if Capital Investment >25 Lakh) per month. This amount shall be adjusted against every month User Charges invoices or financial period of one year. In the event, for whatsoever reason, the GENERATOR is unable to utilize the facility services for a particular month/period, the GENERATOR shall forfeit the amount that is unutilized in that financial year.

Terms & Conditions:

a. This membership is valid as long as the user industry is in good standing with the CHWTSDF and has continued valid authorization from WBPCB.
b. The membership deposit is one time refundable deposit with benefits for full of tenure CHW-TSDF. The deposit will be refunded against waste disposable charges, when desired to discontinue membership, before the end of life of TSDF, otherwise it lapses.
c. This CHW-TSDF shall accept only hazardous wastes as classified in Hazardous & Other Waste (Management & Transboundry Movement) Rules, 2016 for disposal and shall not accept radioactive wastes, Municipal wastes, Bio-Medical waste.
d. Acceptance of wastes is dependent on the fulfillment of regulatory and statutory guidelines for operations of CHWTSDF issued from time to time.
e. Pathway of disposal of wastes and its price shall be decided based on the guidelines issued from time to time by the appropriate regulatory authorities.

For **IRC Agrochemicals Pvt Limited**

Name: C.S.Prasad
Designation: G.M.Production

For **WEST BENGAL WASTE MANAGEMENT LTD**

Name: SNEHANGSHU CHAKRABORTY
Designation: PROJECT IN-CHARGE

IRC Agrochemicals Pvt Ltd

c) **Incineration Charges: per MT or KL (also depends on Material Density)**
Rs. 8200/- (Base Cost) + Cost of Chemicals, Additives + Cost of Fuel + Cost of Power + Cost of Pollutant Scrubbing + Cost of throughput time + residual landfill

3) <u>Transportation Charges:</u> [Optional, applicable when Operator Services are utilized]

a) **Waste Transport Charges:**

A. Minimum Charges Applicable per Trip for local HALDIA region.

i. For Six Wheeler Approximately 5.0 MT capacity Vehicle - Rs 3000/-
ii. For Six Wheeler Approximately 7.5 MT Capacity Vehicle - Rs 4000/-
iii. For Ten Wheeler Approximately 16 MT Capacity Vehicle - Rs 6000/-

B. Minimum Charges Applicable per Trip for Non-local.

i. Rs. 6.20/- per Km per Ton (MT), distance calculated both-ways. Full truck charges will be levied if the full quantity load as per vehicle passing capacity is not given by generator.

b) **Truck Detention Charges:**

Maximum time of Two hours is allowed for the truck to be detained at the GENERATOR premises from the time of reporting to their Security Gate. In the event this period is exceeded then Rs. 750/- per hour shall be charged as detention charges unless it is mutually agreed and accepted between both parties in writing.

4] <u>Container Maintenance Charges:</u> [Optional, applicable when Operator Services are utilized]

The GENERATOR has to pay the following charges as mentioned below towards the services of the Container, if opted for by the GENERATOR.

a) **Container Maintenance charges:** The Container deposits are: -

- 5.0 MT Hook loaders — Rs.2,75,000/- per Container
- 10.0 MT Hook Loaders — Rs.3,25,000/- per Container
- 15.0 MT Hook Loaders — Rs.4,00,000/- per Container

Note: Since these containers will be replaced after three years, above container maintenance charges will be valid for three years only

b) **Container Handling Charges:**

The GENERATOR shall pay for Container Handling Charges to Operator as follows for utilizing the Material Handling Equipment.

Unloading Charges: Rs 350/- per MT

5] <u>Minimum Monthly Service Charges:</u>

IRC Agrochemicals Pvt. Ltd.

ENCLOSURE XIX: PUBLIC HEARING PROCEEDINGS

SPEED POST

WEST BENGAL POLLUTION CONTROL BOARD
(Department of Environment, Govt. of West Bengal)
Paribesh Bhawan, 10A, Block - LA, Sector-III
Bidhannagar, Kolkata-700 106, India
Tel : 2335 - 9088 / 7428 / 8211 / 6731 / 0261 / 8861 / 1625
Fax : 2335 - 2813
City Code : 33, Country Code : 91
Website: **www.wbpcb.gov.in**

Memo No. -2N-61/2021(E) **Dated: .11.2021**

To,
The Member Secretary
Expert Appraisal Committee (Industry-2)
Ministry of Environment, Forests & Climate Change,
Govt. of India, Indira Paryavaran Bhawan,
Jor Bagh Road, Aliganj, New Delhi – 110 003.

Sub: Public Hearing for the proposed expansion of Fertilizer Plant at Durgachak, Haldia, PO & PS – Durgachak, Dist. – Purba Medinipur, PIN – 721602, West Bengal, by **M/s. Indorama India Pvt. Ltd.**

Sir,

I am enclosing herewith the following documents for the above mentioned project towards environmental clearance by the Ministry of Environment, Forests & Climate Change, Govt. of India.

1) Chronology of events leading to Public Hearing. (Annexure – I).
2) Minutes of rescheduled Public Hearing dated 30.09.2021 at the auditorium hall of M/s. Indorama India Pvt. Ltd. (Annexure – II).
3) Copy of attendance of panel members and others in Public Hearing. (Annexure – III).
4) Two CDs containing the videography of the public hearing. (Annexure – IV).

Yours faithfully,

Sd/-
Senior Environmental Engineer (EIM Cell)
West Bengal Pollution Control Board

Enclo: As stated.

Memo No.709(1)-2N-61/2021(E) **Dated: 18 .11.2021**

Copy to:
Mr. Chandra Shekhar Prasad, VP-Manufacturing, M/s. Indorama India Pvt. Ltd., Indorama Durgachak, Haldia, PO & PS – Durgachak, Dist – Purba Medinipur, West Bengal – 721 602.

18/11/2021.

Senior Environmental Engineer (EIM Cell)
West Bengal Pollution Control Board

Annexure-I

Chronology of events leading to Public Hearing

1) Copy of the letter from the District Magistrate, Dist – Purba Medinipur dated 16.08.2021 (copy enclosed).

2) Letter of circulation of copies of Executive Summary and EIA / EMP of the project on 24.08.2021 (copy enclosed).

3) Notification of Public Hearing in three local dailies published on 23.08.2021 (copy enclosed).

4) Holding Public Hearing at the at the auditorium hall of M/s. Indorama India Pvt. Ltd on 30.09.2021.

Copies of Executive Summary with EIA/EMP report were available for public scrutiny in the offices of:

1. Office of the District Magistrate, Purba Medinipur, Govt. of West Bengal.
2. Office of the Additional District Magistrate & District Land & Land Reforms Officer, Dist – Purba Medinipur, Govt. of West Bengal.
3. Office of the Sub-Divisional Officer, Haldia Sub Division, Dist – Purba Medinipur.
4. Office of the General Manager, D.I.C., Purba Medinipur.
5. Office of the Chairman, Haldia Municipality, Dist – Purba Medinipur
6. Office of the CEO, Haldia Development Authority, Dist – Purba Medinipur.
7. Office of the Chief Engineer (O & E), Paribesh Bhawan, 10A, Block-LA, Sector-III, Bidhannagar, Kolkata – 700 106.
8. Office of the In-Charge, Haldia Regional Office, Super Market Building, (3rd Floor), PO & PS – Durgachak, Haldia, Dist – Purba Medinipur.
9. Department of Environment, Govt. of West Bengal, Pranisampad Bhavan, 5th Floor, LB-2, Sector – III, Salt Lake, Kolkata 700 106.
10. Ministry of Environment, Forests & Climate Change, Eastern Zonal Office, A/3, Chandra Sekharpur, Bhubaneswar-751023, Odisha.
11. Head Office of West Bengal Pollution Control Board, Paribesh Bhawan, 10A, Block-LA, Sector-III, Bidhannagar, Kolkata – 700 106.

Annexure-I (Sl. No. 1) (4)

পশ্চিমবঙ্গ সরকার
জেলা শাসক ও সমাহর্তার করণ
পূর্ব মেদিনীপুর
গনপতিনগর, নিমতৌড়ী, পোস্ট-উত্তর
সোনামুই থানা :তমলুক,
পিন নং : ৭২১৬৪৮

Government of West Bengal
Office of the District Magistrate & Collector
Purba Medinipur
At :Ganapatinagar, Nimtouri, PO-Uttar Sonamui,
PS : Tamluk ; Dist : Purba Medinipur Pin :721648
Email: dmpurba@gmail.com
Phone No. 03228-262098

Memo. No. 2587 Estt./DL&LRO(PM)/21 Dated. 16 /08 /2021

To
The Senior Environmental Engineer
(EIM Cell)
West Bengal Pollution Control Board
Department of Environment, Govt of West Bengal
Paribesh Bhawan ,10A, Block-LA, Sector -III
Bidhannagar, Kolkata-700106

Subject: Public hearing for the proposed expansion of Fertilizer Plant at Durgachak , Haldia, P.O.+P.S.-Durgachak, Dist-Purba Medinipur, PIN-721602, West Bengal, by M/S. Indorama India Pvt. Ltd.

Ref : His Office Memo. No. 5039/10-2N -61/ 2021(I-) Dated: 19.07.2021

Apropos the above mentioned subject & reference, this is to inform that ADM & DL &LRO, Purba Medinipur in charge of Environment related matter, will preside over the Public hearing at the auditorium hall of the M/S. Indorama India Pvt. Ltd. On **30.09.2021** at **12:00 hrs.**

He is requested to take necessary measures i.e. publication of the matter regarding hearing in daily Newspapers and etc.

Enclo: As stated

District Magistrate
Purba Medinipur

Memo. No. 2587 /1(2) /Estt./DL&LRO(PM)/21 Dated. 16 /08/2021

Copy forwarded to:

1. The Sub-Divisional Officer, Haldia is requested to monitor the matter in Co-ordination with the M/S Indorama India Pvt. Ltd., Haldia and make arrangement of miking for wide publicity of such hearing.

2. The General Manager of M/S Indorama India Pvt. Ltd., Haldia is requested to make necessary logistic support for conducting such hearing on the stipulated date & time.

District Magistrate
Purba Medinipur

Annexure-I (Sl. No. 2) (9)

WEST BENGAL POLLUTION CONTROL BOARD
(Department of Environment, Govt. of West Bengal)
Paribesh Bhawan, 10A, Block - LA, Sector-III
Bidhannagar, Kolkata-700 106, India
Tel : 2335 - 9088 / 7428 / 8211 / 6731 / 0261 / 8861 / 5868 / 1625
Fax : 2335 - 5868 / 2813
City Code : 33, Country Code : 91
Website: www.wbpcb.gov.in

Memo No. 577(1-11) -2N-61/2021(E) Dated: 24 .08.2021

CIRCULAR

It is hereby informed that a Public Hearing will be held on **30.09.2021** at **12:00 hrs.** at the auditorium hall of M/s. Indorama India Pvt. Ltd. for the proposed expansion of Fertilizer Plant at Durgachak, Haldia, PO & PS – Durgachak, Dist. – Purba Medinipur, PIN – 721602, West Bengal, by **M/s. Indorama India Pvt. Ltd.** Paper notification in this respect may kindly be seen in "Millennium Post", "Sanmarg" and "Aajkaal" dated 23.08.2021.

In this regard copies of the draft EIA / EMP report and Executive Summary of the project along with soft copies are sent herewith for record and for access to the general public for their information and participation of locally affected persons in the Public Hearing on **30.09.2021.** Special care against any damage or pilferage of the draft EIA / EMP report and Executive Summary copies should be taken as these are very much limited in number.

24/08/2021.

Senior Environmental Engineer (EIM Cell)
West Bengal Pollution Control Board

DAC

Memo No. 577(11) -2N-61/2021(E) Dated: 24.08.2021

Copy forwarded with copies of draft EIA / EMP report, Executive Summary (English and Bengali) along with soft copies: -

1.	Office of the District Magistrate, Purba Medinipur, Govt. of West Bengal.	1 Set of Executive summary in English & Bengali and one draft EIA / EMP report
2.	Office of the Additional District Magistrate & District Land & Land Reforms Officer, Dist – Purba Medinipur, Govt. of West Bengal.	- Do -
3.	Office of the Sub-Divisional Officer, Haldia Sub Division, Dist – Purba Medinipur.	- Do -
4.	Office of the General Manager, D.I.C., Purba Medinipur.	- Do -
5.	Office of the Chairman, Haldia Municipality, Dist – Purba Medinipur	- Do -
6.	Office of the CEO, Haldia Development Authority, Dist – Purba Medinipur.	- Do -
7.	Office of the Chief Engineer (O & E), Paribesh Bhawan, 10A, Block-LA, Sector-III, Bidhannagar, Kolkata – 700 106.	- Do -
8.	Office of the In-Charge, Haldia Regional Office, Super Market Building, (3rd Floor), PO & PS – Durgachak, Haldia, Dist – Purba Medinipur.	- Do -
9.	Department of Environment, Govt. of West Bengal, Pranisampad Bhavan, 5th Floor, LB-2, Sector – III, Salt Lake, Kolkata 700 106.	- Do -
10.	Ministry of Environment, Forests & Climate Change, Eastern Zonal Office, A/3, Chandra Sekharpur, Bhubaneswar-751023, Odisha.	- Do -
11.	Head Office of West Bengal Pollution Control Board, Paribesh Bhawan, 10A, Block-LA, Sector-III, Bidhannagar, Kolkata – 700 106.	- Do -

24/08/2021

Senior Environmental Engineer (EIM Cell)
West Bengal Pollution Control Board

Annexure-I (SI No. 23)

Millennium Post : 23.08.2021

NOTICE

West Bengal Pollution Control Board

In compliance with Notification No. S.O.1533(E) dated 14.09.2006 of Ministry of Environment, Forests & Climate Change, Govt. of India, it is hereby notified that, the Public Hearing for the proposed expansion of Fertilizer Plant at Durgachak, Haldia, PO & PS – Durgachak, Dist. – Purba Medinipur, PIN – 721602, West Bengal, by M/s. Indorama India Pvt. Ltd. is hereby scheduled on 30.09.2021 at 12:00 hrs. at the auditorium hall of M/s. Indorama India Pvt. Ltd.

Any person or association of persons who feel that he / it might be affected or the local authority involved, may consult the copies of Executive Summary of the project (English and Bengali) and draft EIA / EMP report would be available at the (1) Office of the District Magistrate, Purba Medinipur (2) Office of the Additional District Magistrate & District Land & Land Reforms Officer, Dist – Purba Medinipur (3) Office of the Sub-Divisional Officer, Haldia Sub-Division, Dist – Purba Medinipur (4) Office of the General Manager, D.I.C., Purba Medinipur (5) Office of the Chairman, Haldia Municipality, Dist – Purba Medinipur (6) Office of the CEO, Haldia Development Authority, Dist – Purba Medinipur (7) Office of the In-charge, Haldia Regional Office, West Bengal Pollution Control Board, Super Market Building, (3rd Floor), PO & PS – Durgachak, Haldia, Dist – Purba Medinipur, PIN – 721602, (8) Department of Environment, Govt. of West Bengal, Pranisampad Bhavan, 5th Floor, LB-2, Sector – III, Salt Lake, Kolkata 700 106 (9) Ministry of Environment, Forests & Climate Change, Eastern Zonal Office, A/3, Chandrasekharpur, Bhubaneswar-751023, Odisha (10) Head office of West Bengal Pollution Control Board, Paribesh Bhawan, 10A, Block – LA, Sector – III, Bidhannagar, Kolkata – 700 106. Executive Summary and the application form of the project would also be available in the website of the Board: www.wbpcb.gov.in

Any person or groups who might be locally affected from the proposed project or activity may participate in the public hearing to be held on 30.09.2021 at 12:00 hrs. at the auditorium hall of M/s. Indorama India Pvt. Ltd. They may make verbal or written suggestions / objections in the matter in the public hearing meeting. Any other concerned persons having a plausible stake in the environmental aspects of the project or activity may make suggestions / objections in writing to the Senior Environmental Engineer (EIM Cell), Paribesh Bhawan, 10A, Block – LA, Sector – III, Bidhannagar, Kolkata – 700 106 before the date of public hearing.

Member Secretary
West Bengal Pollution Control

Aajkaal : 23.09.2021

বিজ্ঞপ্তি

পশ্চিমবঙ্গ দূষণ নিয়ন্ত্রণ পর্ষদ

পরিবেশ, বন ও জলবায়ু পরিবর্তন মন্ত্রক, ভারত সরকারের বিজ্ঞপ্তি নম্বর এস.ও.১৫৩৩(ই) তারিখ ১৪.০৯.২০০৬ অনুসারে, এতদ্বারা বিজ্ঞপ্তি জারি করা হচ্ছে যে, মেসার্স ইন্দোরামা ইন্ডিয়া প্রাইভেট লিমিটেড দ্বারা দুর্গাচক, হলদিয়া, ডাক ও থানা-দুর্গাচক, জেলা-পূর্ব মেদিনীপুর, পিন-৭২১৬০২ অবস্থিত কার্বোনাইজার প্ল্যান্টের প্রস্তাবিত সম্প্রসারণ কাজের জন্য জনশুনানি ৩০.০৯.২০২১ তারিখে বেলা ১২টায় মেসার্স ইন্দোরামা ইন্ডিয়া প্রাইভেট লিমিটেডের অডিটোরিয়াম হল পশ্চিমবঙ্গতে ধার্য করা হয়েছে।

কোনও ব্যক্তি বা ব্যক্তিবর্গের সমষ্টি যিনি বা যাঁরা প্রভাবিত হতে পারেন বা সংযুক্ত স্থানীয় কর্তৃপক্ষ, আলোচ্য প্রকল্পের এক্সিকিউটিভ সামারির কপি (ইংরেজি ও বাংলা) দেখতে পারেন এবং ইআইএ/ইএমপি রিপোর্টের ড্রাফ্ট বা খসড়া নিম্নলিখিত কার্যালয়গুলিতে পাওয়া যাবে (১) জেলাশাসক, পূর্ব মেদিনীপুর-এর কার্যালয়, (২) অতিরিক্ত জেলাশাসক (এলআর) এবং ডিস্ট্রিক্ট ল্যান্ড অ্যান্ড ল্যান্ড রিফর্মস অফিসার, জেলা-পূর্ব মেদিনীপুর-এর কার্যালয়, (৩) সাব-ডিভিশনাল অফিসারের কার্যালয়, হলদিয়া সাব-ডিভিশন, জেলা-পূর্ব মেদিনীপুর, (৪) জেনারেল ম্যানেজার, ডি.আই.সি., পূর্ব মেদিনীপুর-এর কার্যালয়, (৫) চেয়ারম্যান, হলদিয়া মিউনিসিপ্যালিটির কার্যালয়, জেলা-পূর্ব মেদিনীপুর, (৬) সিইও, হলদিয়া ডেভালপমেন্ট অথরিটির কার্যালয়, জেলা-পূর্ব মেদিনীপুর, (৭) ইনচার্জ, হলদিয়া আঞ্চলিক কার্যালয়, পশ্চিমবঙ্গ দূষণ নিয়ন্ত্রণ পর্ষদ, সুপার মার্কেট বিল্ডিং, (৩য় তল), ডাক ও থানা-দুর্গাচক, হলদিয়া, জেলা-পূর্ব মেদিনীপুর, পিন-৭২১৬০২, (৮) পরিবেশ দপ্তর, পশ্চিমবঙ্গ সরকার, প্রাণীসম্পদ ভবন, ৬ষ্ঠ তল, এলবি-২, সেক্টর-৩, বিধাননগর, কলকাতা - ৭০০১০৬, (৯) পরিবেশ, বন এবং জলবায়ু পরিবর্তন মন্ত্রক, পূর্বাঞ্চল ক্ষেত্রীয় কার্যালয়, এ/৩, চন্দ্রশেখরপুর, ভুবনেশ্বর-৭৫১০২৩, ওড়িশা, (১০) পশ্চিমবঙ্গ দূষণ নিয়ন্ত্রণ পর্ষদ-এর সদর কার্যালয়, পরিবেশ ভবন, ১০এ, ব্লক-এলএ, সেক্টর-৩, বিধাননগর, কলকাতা-৭০০১০৬। এক্সিকিউটিভ সামারি ও প্রকল্পের আবেদনপত্র পর্ষদের ওয়েবসাইট www.wbpcb.gov.in-এ পাওয়া যাবে।

প্রস্তাবিত প্রকল্প বা কার্যাবলীর দরুন স্থানীয়ভাবে প্রভাবিত হতে পারেন এরূপ ব্যক্তি বা গোষ্ঠী মেসার্স ইন্দোরামা ইন্ডিয়া প্রাইভেট লিমিটেডের অডিটোরিয়াম হল-এ ৩০.০৯.২০২১ তারিখে বেলা ১২টায় অনুষ্ঠেয় জনশুনানিতে অংশ নিতে পারেন। জনশুনানির সভায় আলোচ্য বিষয় সম্পর্কে তাঁদের পরামর্শ/আপত্তি মৌখিক অথবা লিখিতভাবে জানাতে পারেন। প্রকল্প অথবা কার্যাবলীর পরিবেশগত দিক থেকে প্রভাবিত হবার যুক্তিগ্রাহ্য কারণ আছে এরূপ অন্য সংশ্লিষ্ট ব্যক্তি লিখিত আকারে তাঁর পরামর্শ/আপত্তি জনশুনানির তারিখের পূর্বে সিনিয়র এনভায়রনমেন্টাল ইঞ্জিনিয়ার (ইআইএম সেল), পরিবেশ ভবন, ১০এ, ব্লক-এলএ, সেক্টর-৩, বিধাননগর, কলকাতা-৭০০১০৬-এর কাছে জানাতে পারেন।

সদস্য সচিব
পশ্চিমবঙ্গ দূষণ নিয়ন্ত্রণ পর্ষদ

23/08/2021

...नुसार अर्थ तथा धाराओं लेकर सवाल सामने आया था।

सूचना

पश्चिम बंगाल प्रदूषण नियंत्रण बोर्ड

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, भारत सरकार की अधिसूचना संख्या एस.ओ.1533 (ई) दिनांक 14.09.2006 के अनुपालन में, एतद्द्वारा यह अधिसूचित किया जाता है कि मैसर्स इंडोरामा इंडिया प्रा. लि. द्वारा दुर्गाचक, हल्दिया, पोस्ट एवं थाना-दुर्गाचक, जिला-पूर्व मेदिनीपुर, पिन-721602, पश्चिम बंगाल में उर्वरक संयंत्र के प्रस्तावित विस्तार के लिए जन सुनवाई मैसर्स इंडोरामा इंडिया प्रा. लि. के ऑडिटोरियम हॉल में 30.09.2021 को 12.00 बजे निर्धारित है।

कोई भी व्यक्ति या व्यक्तियों का संघ या इससे जुड़े स्थानीय प्राधिकरण, जिसे लगता है कि वह प्रभावित हो सकता है वे परियोजना के कार्यकारी सारांश (अंग्रेजी और बांग्ला) की प्रतियों से परामर्श कर सकता है और ईआईए / ईएमपी रिपोर्ट का मसौदा निम्नलिखित कार्यालयों में उपलब्ध होगा (1) जिलाधिकारी का कार्यालय, पूर्व मेदिनीपुर (2) अपर जिलाधिकारी एवं जिला भूमि एवं भूमि सुधार अधिकारी का कार्यालय, जिला-पूर्व मेदिनीपुर (3) अनुमंडल पदाधिकारी कार्यालय, हल्दिया अनुमंडल, जिला- पूर्व मेदिनीपुर (4) महाप्रबंधक का कार्यालय, डीआईसी, पूर्व मेदिनीपुर (5) अध्यक्ष, हल्दिया नगर पालिका का कार्यालय, जिला-पूर्व मेदिनीपुर (6) सीडीओ का कार्यालय, हल्दिया विकास प्राधिकरण, जिला- पूर्व मेदिनीपुर (7) प्रभारी, हल्दिया क्षेत्रीय कार्यालय का कार्यालय, पश्चिम बंगाल प्रदूषण नियंत्रण बोर्ड, सुपर मार्केट बिल्डिंग, (तीसरी मंजिल), पोस्ट एवं थाना-दुर्गाचक, हल्दिया, जिला-पूर्व मेदिनीपुर, पिन-721602, (8) पर्यावरण विभाग, पश्चिम बंगाल सरकार, प्रणीसंपद भवन, 5वीं मंजिल, एलबी-2, सेक्टर-III, साल्ट लेक, कोलकाता 700 106 (9) पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, पूर्वी क्षेत्रीय कार्यालय, ए/3, चंद्रशेखरपुर, भुवनेश्वर-751023, ओडिशा (10) पश्चिम बंगाल प्रदूषण नियंत्रण बोर्ड का मुख्यालय, परिवेश भवन, 10ए, ब्लॉक-एलए, सेक्टर-III, बिधाननगर, कोलकाता-700 106। कार्यकारी सारांश और परियोजना का आवेदन प्रपत्र भी बोर्ड की वेबसाइट www.wbpcb.gov.in पर उपलब्ध होगा।

कोई भी व्यक्ति या समूह जो प्रस्तावित परियोजना या गतिविधि से स्थानीय रूप से प्रभावित हो सकता है, मैसर्स इंडोरामा इंडिया प्रा. लि. के ऑडिटोरियम हॉल में 30.09.2021 को 12:00 बजे होने वाली जन सुनवाई में भाग ले सकता है। वे जन सुनवाई बैठक में इस मामले में मौखिक या लिखित सुझाव/आपत्ति दे सकते हैं। परियोजना या गतिविधि के पर्यावरणीय पहलुओं में संभावित हिस्सेदारी रखने वाले कोई अन्य संबंधित व्यक्ति वरिष्ठ पर्यावरण अभियंता (ईआईएम सेल), परिवेश भवन, 10 ए, ब्लॉक- एलए, सेक्टर- III, बिधाननगर, कोलकाता-700106 को जन सुनवाई की तारीख से पहले लिखित रूप में सुझाव / आपत्तियां दे सकते हैं।

सदस्य सचिव
पश्चिम बंगाल प्रदूषण नियंत्रण बोर्ड

PROCEEDINGS OF THE PUBLIC HEARING FOR THE PROPOSED EXPANSION OF M/S INDORAMA INDIA PVT. LTD., A FERTILIZER PLANT AT HALDIA, DURGACHAK, DIST- PURBA MEDINIPUR, PIN - 721602, WEST BENGAL, HELD ON 30.09.2021 AT 12:00 HRS AT AUDITORIUM HALL OF M/S INDORAMA INDIA PVT. LTD. LOCATED AT P.S AND P.O – DURGACHAK, DIST- PURBA MEDINIPUR, WEST BENGAL

Indorama India Pvt. Ltd. (the project proponent) had submitted an application to West Bengal Pollution Control Board (herein after referred to as WBPCB) for the proposed expansion of its fertilizer plant located at Haldia, Durgachak, Dist- Purba Medinipur, pin - 721602, West Bengal by installation of a new DAP/NPK plant of capacity 500000 TPA(in terms of DAP) or 8,85,000 TPA (in terms of NPK), a new ammonium sulphate plant of capacity 31000 TPA, capacity enhancement of existing sulphuric acid plant (Increase of capacity 6600 TPA) and other necessary infrastructures. As per the EIA notification S.O 1533 dated 14th September, 2006 of the MoEF, Govt. Of India, Environment Clearance (EC) for the said project is required to be obtained from the MoEF & CC, Govt. of India after conducting Public Hearing.

Accordingly, the WBPCB had conducted the public hearing on 30.09.2021 at 12:00 hours at Auditorium hall of M/s Indorama India Pvt. Ltd., Haldia, P.O. and P.S. - Durgachak, Dist- Purba Medinipur, West Bengal.

Dr. Prasun Kumar Mondal, Assistant Environmental Engineer & In- Charge, Haldia Regional Office, WBPCB welcomed the audience and panel members, requested Sri Anirban Kolay, Additional District Magistrate & District Land & Land Reforms Officer, District - Purba Medinipur to preside over the public hearing, informed about the purpose of the said public hearing and briefed about the project and its probable impact on the environment - ambient air, water, flora, fauna, vegetation, soil etc. before and after the project as per EIA report submitted by the project proponent. He informed that proceedings of the public hearing along with videography will be forwarded to the appropriate authorities for their consideration for setting up the proposed expansion project of Indorama India Pvt. Ltd.

He also requested the Additional District Magistrate & District Land & Land Reforms Officer, District - Purba Medinipur to deliver permission for power point presentation of the proposed project by the project proponent with the help of their technical team.

Sri Anirban Kolay, Additional District Magistrate & District Land & Land Reforms Officer, District - Purba Medinipur presided over the hearing, welcomed for deliberation of presentation and requested the audience to express their opinion and thoughts freely when presentation was over.

List of the panel members and others present during the Public Hearing is enclosed in Annexure-I.

Sri Arun Kumar Mondal, Senior Manager on behalf of M/s Indorama India Pvt. Ltd. narrated the details of the proposed project and the pollution control measures to be taken through a power point presentation.

After the completion of power point presentation by the project proponent in the public hearing, Sri Anirban Kolay, Additional District Magistrate & District Land & Land Reforms Officer, District - Purba Medinipur as well as chairman of the said hearing addressed the audience to raise their opinions, suggestions, queries with respect to the proposed expansion project. The queries raised by the audience are presented below:

In the said hearing, Sri Samiran Maity of village - Kumarchak welcomed the project and asked how the local people will be benefited from the proposed expansion project.

Sri Soumitra Das of village - Alichak welcomed the project and appreciated the CSR activities of the industry. He also asked the project proponent about the employment opportunities generated through the proposed project.

Sri Bishnu Pada Pramanik of village – Basudevpur in the hearing, requested the project proponent to take preventive steps for controlling air pollution of the proposed project.

Sri Arjun Das from Kumarchak requested project proponent to express their view on how they are handling COVID 19 pandemic situation.

After the queries of the audience was over, Dr. Prasun Kumar Mondal, Assistant Environmental Engineer & In- Charge, Haldia Regional Office, WBPCB requested the project proponent to deliver their reply on the issues raised by the audience.

Sri Saurabh Bhattacharya, DGM- HR, on behalf of Indorama India Pvt. Ltd. informed that the company is doing CSR activity in the field of education and health and they will continue to do the same. He also mentioned that the unit has provided jobs to local villagers based on their academic qualification and also eligible candidate should be engaged by the unit in coming future for upcoming project. They maintained COVID protocols like installation of temperature sensor, hand sanitization machine at gate; increase awareness among employees; compulsory wearing of masks; reduction of sitting arrangement at rooms to 50%; sanitization at work place twice in a week during the period of COVID-19 2nd wave.

Sri Arun Kumar Mondal, Senior Manager, Environment, on behalf of M/s Indorama India Pvt. Ltd. explained that pollution control device of latest technology will be installed for prevention of air pollution.

Sri Anirban Kolay, Additional District Magistrate & District Land & Land Reforms Officer, District - Purba Medinipur asked the project proponent to brief about the current disaster management system they are following. He also asked the project proponent to enhance safety control measures and advised for collaboration with local and district authorities regarding any kind of disaster.

Mr. Chanchal Ghosh, GM - Safety, Health & Environment of the said industry mentioned that they have the onsite emergency plan equipped fire and safety management system etc and also assured that they will collaborate with local district authorities if any kind of disaster arises. He also informed that sincere efforts would be taken to implement all the issues raised in the public hearing. They performed on site as well as off site emergency plan, mock drill on every

6 months. Their quick response team operates round the clock with fire tenders and ambulances.

Dr. Prasun Kumar Mondal, Assistant Environmental Engineer & Incharge, Haldia Regional Office, WBPCB thanked the gathering of people for gladly welcoming the proposed expansion project of Indorama India Pvt. Ltd.

Finally, the public hearing was concluded thanking the audience as well as all the panel members by Dr. Prasun Kumar Mondal, Assistant Environmental Engineer & Incharge, Haldia Regional Office, WBPCB after taking consent from Sri Anirban Kolay, Additional District Magistrate & District Land & Land Reforms Officer, District - Purba Medinipur as well as chairman of the said public hearing.

Sri Anirban Kolay
Additional District Magistrate, LR & DLLRO
Purba Medinipur District

Addl. District Magistrate &
Dist. Land & Land Reforms Officer
Purba Medinipur, Tamluk

Prasun Kr. Mondal

Dr. Prasun Kumar Mondal
Assistant Environmental Engineer & Incharge,
Haldia RO, West Bengal Pollution Control Board

Asst. Environmental Engineer & In Charge
West Bengal Pollution Control Board
Haldia Regional Office

Annexure II

PUBLIC HEARING OF M/S INDORAMA INDIA PVT LTD FOR PROPOSED EXPANSION OF FERTILISER PLANT AT DURGACHAK, HALDIA, P.O + P.S - DURGACHAK, DIST-PURBA MEDINIPUR, PIN NO-721602, WEST BENGAL ON 30.9.2021 AT AUDITORIUM HALL OF INDORAMA INDIA PVT LTD.

SL NO	NAME OF PANEL MEMBERS	DESIGNATION	SIGNATURE
1.	ANIRBAN KOLAY	ADM(LR) Dist. Purba Medinipur	30/9/2021
2.	SANAT KUMAR BISHAS	OC Mirm ADM(LR) Dist. Purba Medinipur	30/09/2021
3.	DR. PRASUN KR. MONDAL	Asst. Env. Engr. & I/c Haldia R.O., WBPCB	Prasun Kr Mondal 30/09/21

Sl. No.	Name	Address	Contact no.	Signature
ক্রমিক নং	(নাম)	(ঠিকানা)	(মো. নং.)	(স্বাক্ষর)
1.	[illegible]	[illegible]	9434693500	[illegible]
2.	[illegible]	[illegible]	8942891933	[illegible]
3.	Sanjoy Maity	Kumarchak	7679708962	[illegible]
4.	[illegible]	[illegible]	8159037409	[illegible]
5.	[illegible]	[illegible]	9749065917	[illegible]
6.	[illegible]	[illegible]	8145949668	[illegible]
7.	[illegible]	[illegible]	9933110453	[illegible]
8.	Koushik Pathak	[illegible]	7407649886	Koushik Pathak
9.	Bishnupada [illegible]	Bazudebpur	9625323696	[illegible]
10.	[illegible]	[illegible]	[illegible]	[illegible]
11.	[illegible]	[illegible]	7407648886	[illegible]
12.	[illegible]	[illegible]	9851100067	[illegible]
13.	[illegible]	[illegible]	03402837341	[illegible]
14.	[illegible]	[illegible]	9475432806	[illegible]
15.	[illegible]	[illegible]	8001270944	[illegible]
16.	Pancharan mandal	[illegible]	9475433191	[illegible]
17.	Jayanta Kr Das	[illegible]	8637087268	[illegible]
18.	A. K. Azad	[illegible]	8581980057	[illegible]
19.	[illegible]	[illegible]	8001291166	[illegible]
20.	[illegible]	[illegible]	—	[illegible]
21.	Ashok kr [illegible]	Jayramathchak	7872307900	[illegible]
22.	Somnath Mishra	Girish more	7076311788	[illegible]
23.	Bom Sankar	Dugachak	8759453050	[illegible]
24.	Sabarath Das	DUNO PUR	8670037268	Sabarath Das
25.	Tarani [illegible]	Dumdumpur	8972912907	Tarunmoy
26.	[illegible]	[illegible]	[illegible]	[illegible]
27.	[illegible]	[illegible]	[illegible]	[illegible]
28.	R/M Pattanayak	Durgachak	8670899399	[illegible]
29.	[illegible]	Fingar	7501627147	[illegible]
30.	Sayanta Mondal	D-Chak	7479450288	[illegible]
31.	[illegible]	[illegible]	8348525303	[illegible]
32.	Rathin Das	[illegible]	8972555737	[illegible]

Sl. no. ক্রমিক	Name (নাম)	Address (ঠিকানা)	Contact no. (ফোন নং)	Signature (স্বাক্ষর)
33	Dilip patra	Finger	9564042538	D patra
34	[illegible]	[illegible]	7407480392	[illegible]
35	Kalipada Gantait	Durga chak	7384324760	[illegible]
36	[illegible]	[illegible]	7563954248	[illegible]
37	[illegible]	[illegible]	7407692259	[illegible]
38	[illegible]	[illegible]	8967617923	[illegible]
39	Mantu Jana	Durgachak	9635855155	[illegible]
40	Asit Patra	Parbatipur	-	Patra
41	Biman Ch. Das	Kumarchak	8250261472	B.C.D.
42	Sandip Bhunia	Durgachak-E Block	9647006911	[illegible]
43	Debasish Roy	Durgachak. E Block	9474715867	[illegible]
44	Uttam Manna	Haldia	9002185150	U K M
45	[illegible]	[illegible]	-	[illegible]
46	[illegible]	[illegible]	7501112642	K Kulti
47	[illegible]	[illegible]	-	[illegible]
48	Yasuf Middya	Kumarchak	8768429797	[illegible]
49	[illegible] Madar	Kumar Chak	8145922493	[illegible]
50	[illegible]	[illegible]	7797953593	[illegible]
51	RAJ	[illegible]	7047537196	RAJ
52	Rabindranath Hati	Durgachak		R.N. Hati
53	[illegible]	[illegible]	9748266108	[illegible]
54	Prasanta [illegible]	Parbatipur	9153927855	[illegible]
55	Kanailal Ghosh	Ramnagar	8927502423	K. Ghosh
56	Srimanta Manna	Rajchak	8906447686	[illegible]
57	Tapan Kr. Patra	Debhog	7501548443	[illegible]
58	Tridib Rishi	BAZARBANIAPUR	9932951135	[illegible]
59	[illegible]	[illegible]	-	[illegible]
60	Suchitra Ballabh	[illegible]	9647133729	Suchitra Ball
61	Chaitali Das	Taj Nagar	7076772913	Chaitali
62	[illegible]	[illegible]	-	[illegible]
63	Buddhadev Midya	Dochak	8918126830	Buddhadev M
64	Chandan auchhait	Haripur	9327303204	C auchhait

Sl. no.	Name	Address	Contact no.	Signature
65.	Sanay Das	Patna	7076777729[illegible]	Sanay Das.
66.	[illegible]	[illegible]	7501100189	[illegible]
67.	palash kumar patra	kumar chak	9083395861	P. K. Patra.
68.	[illegible]	Baherdih	9474757189	[illegible]
69.	Sovik Midya Das	Kumarchak	8391911265	[illegible]
70.	Sayan [illegible]	Jhikurkhali	76 99[illegible]	[illegible]
71.	Birendra Midya Das	Kumarchak	736483320	[illegible]
72	Subham mondal	Kumarchak	9333585656	S. mondal
73	Anuram Midya Das	Kumarchak	9983589279	A. Midya Das
74	Surya mayPatra	Kumarchak	909[illegible]732236	S. Patra
75	[illegible]	[illegible]	9609243824	[illegible]
76	Dhirendra nath Dhal	Kumarchak	9609204928	[illegible]
77	[illegible]	[illegible]	8653676724	T Das
78	[illegible]	Kumarchak	9733585652	[illegible]
79	Pabesh Mr Book	Chumky	9732914959	P Book
80	Sibupal Das.	Tejnagar	9932809902	[illegible]
81	Madhusudan Mait	Pakalchak	9046205905	[illegible]

ENCLOSURE XX: TEST REPORTS

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Gazette No. : 352, valid upto 08.02.2022

TEST REPORT

Test Report Number	RAA2112118	Page Number	Page 1 of 1
Date of Issue	12.01.2021	Study Period	1st October to 31st December, 2020
NAME & ADDRESS OF CUSTOMER		SAMPLE DETAILS	
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602			
Issued to: EQMS India Pvt. Ltd., 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi		Sample Description : Ambient Air Sampling Location : Project Site Sampling done by : JPT Lab Representative Sampling Duration : 24 Hr. (except CO for 1 hr)	

AMBIENT AIR QUALITY ANALYSIS TEST RESULTS

S.No	Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)	CO (mg/m³)	HF (µg/m³)	NH_3 (µg/m3)
	Test Method	IS: 5182 (Part-23)	JPT/CH/SOP/ AIR/06	IS: 5182 (Part-2)	IS: 5182 (Part- 6)	IS: 5182 (Part-10)	JPT/CH/SOP/AIR/09	Indophenol method
	*NAAQS	100	60	80	80	04	-	400
1	05.10.2020	87	49	7.6	28.40	0.56	<0.2	32.2
2	06.10.2020	74	27	6.8	26.4	0.74	<0.2	26.8
3	12.10.2020	95	41	8.4	23.8	0.60	<0.2	37.3
4	13.10.2020	80	29	7.1	25.6	0.75	<0.2	31.5
5	19.10.2020	94	49	8.5	27.1	0.54	<0.2	34.7
6	20.10.2020	72	30	6.8	20.4	0.86	<0.2	28.5
7	26.10.2020	69	27	10.8	29.5	0.69	<0.2	24.6
8	27.10.2020	85	46	9.2	25.9	0.50	<0.2	32.4
9	02.11.2020	77	38	7.5	26.5	0.66	<0.2	29.5
10	03.11.2020	84	44	10.7	21.9	0.80	<0.2	35.1
11	09.11.2020	74	36	8.1	27.4	0.62	<0.2	37.2
12	10.11.2020	85	44	10.4	26.2	0.71	<0.2	32.4
13	16.11.2020	71	29	8.2	23.9	0.84	<0.2	27.5
14	17.11.2020	86	43	6.8	21.6	0.73	<0.2	39.2
15	23.11.2020	70	36	9.3	24.8	0.86	<0.2	33.5
16	24.11.2020	82	39	7.8	23.5	0.77	<0.2	37.2
17	30.11.2020	89	46	6.2	20.8	0.64	<0.2	29.6
18	01.12.2020	96	55	9.1	25.4	0.80	<0.2	32.8
19	07.12.2020	84	43	11.3	28.1	0.52	<0.2	30.5
20	08.12.2020	92	50	8.8	27.3	0.90	<0.2	33.1
21	14.12.2020	98	56	7.3	26.9	0.76	<0.2	30.8
22	15.12.2020	86	43	9.5	25.8	0.70	<0.2	35.3
23	21.12.2020	82	41	10.2	22.4	0.97	<0.2	28.6
24	29.12.2020	78	38	8.3	24.7	1.09	<0.2	32.9

End of Report

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Authorized Signatory

* Format No. JPT/7.5F-01 Issue No. 02 Issue Date 20.08.2020 Rev. No. 00

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2.The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RAA2112119	Page Number	Page 1 of 1
Date of Issue	12.01.2021	Study Period	1st October to 31st December, 2020
NAME & ADDRESS OF CUSTOMER		SAMPLE DETAILS	
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602			
Issued to: **EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi		Sample Description : Ambient Air Sampling Location : **Durgachak** Sampling done by : JPT Lab Representative Sampling Duration : 24 Hr. (except CO for 1 hr)	

AMBIENT AIR QUALITY ANALYSIS TEST RESULTS

S.No	Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)	CO (mg/m³)	HF (µg/m³)	NH_3 (µg/m3)
	Test Method	IS: 5182 (Part-23)	JPT/CH/SOP/AIR/06	IS: 5182 (Part-2)	IS: 5182 (Part- 6)	IS: 5182 (Part-10)	JPT/CH/SOP/AIR/09	Indophenol method
	*NAAQS	100	60	80	80	04	-	400
1	07.10.2020	54	34	5.9	10.3	0.32	<0.2	<20
2	08.10.2020	46	26	5.6	8.6	0.26	<0.2	<20
3	14.10.2020	58	30	7.6	10.2	0.40	<0.2	<20
4	15.10.2020	50	25	6.7	9.1	0.26	<0.2	<20
5	21.10.2020	63	30	6.2	11.82	0.36	<0.2	<20
6	22.10.2020	50	27	5.9	10.6	0.30	<0.2	<20
7	28.10.2020	47	24	5.6	8.6	0.28	<0.2	<20
8	29.10.2020	59	29	6.2	10.3	0.39	<0.2	<20
9	04.11.2020	56	32	5.6	9.6	0.30	<0.2	<20
10	05.11.2020	62	36	7.4	13.8	0.40	<0.2	<20
11	11.11.2020	59	31	6.2	10.4	0.35	<0.2	<20
12	12.11.2020	65	32	6.9	11.2	0.28	<0.2	<20
13	18.11.2020	49	29	5.9	9.9	0.23	<0.2	<20
14	19.11.2020	63	29	6.5	12.0	0.28	<0.2	<20
15	25.11.2020	58	30	5.9	8.7	0.30	<0.2	<20
16	26.11.2020	63	34	7.3	11.9	0.24	<0.2	<20
17	02.12.2020	54	35	5.8	10.7	0.32	<0.2	<20
18	03.12.2020	66	36	7.5	11.8	0.41	<0.2	<20
19	09.12.2020	59	28	6.0	10.6	0.24	<0.2	<20
20	10.12.2020	68	38	6.8	14.2	0.41	<0.2	<20
21	16.12.2020	55	31	6.2	9.7	0.27	<0.2	<20
22	17.12.2020	62	28	6.8	12.7	0.25	<0.2	<20
23	22.12.2020	51	32	6.1	9.1	0.31	<0.2	<20
24	30.12.2020	64	29	7.2	11.2	0.25	<0.2	<20

End of Report

Checked By

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied. 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

Laboratory: 4/54, Site-IV, Sahibabad Industrial Area, Ghaziabad, (UP) Pin-201010 Tel: 0120-4345989, 9910833356 Email:jptesthouse@gmail.com
Regd Office: G-4A, Vikas Deep Building, 18 District Centre Laxmi Nagar, Delhi- 110092 Tel: +91-11-22026111

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Gazette No. : 352, valid upto 08.02.2022

TEST REPORT

Test Report Number	RAA2112120	Page Number	Page 1 of 1
Date of Issue	12.01.2021	Study Period	1st October to 31st December, 2020
NAME & ADDRESS OF CUSTOMER		SAMPLE DETAILS	
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602			
Issued to: EQMS India Pvt. Ltd., 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi		Sample Description : Ambient Air Sampling Location : Baneswar Chak Sampling done by : JPT Lab Representative Sampling Duration : 24 Hr. (except CO for 1 hr)	

AMBIENT AIR QUALITY ANALYSIS TEST RESULTS

S.No	Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	HF ($\mu g/m^3$)	NH_3 ($\mu g/m3$)
	Test Method	IS: 5182 (Part-23)	JPT/CH/SOP/AIR/06	IS: 5182 (Part-2)	IS: 5182 (Part- 6)	IS: 5182 (Part-10)	JPT/CH/SOP/AIR/09	Indophenol method
	*NAAQS	100	60	80	80	04	-	400
1	05.10.2020	85	46	7.8	26.5	0.79	<0.2	<20
2	06.10.2020	98	59	9.8	27.3	0.98	<0.2	<20
3	12.10.2020	79	42	7.9	21.2	0.78	<0.2	<20
4	13.10.2020	82	45	10.1	22.1	0.84	<0.2	<20
5	19.10.2020	94	53	10.8	30.5	0.91	<0.2	<20
6	20.10.2020	102	49	12.25	30.8	0.92	<0.2	<20
7	26.10.2020	92	55	10.4	26.5	0.81	<0.2	<20
8	27.10.2020	96	50	10.8	27.5	0.98	<0.2	<20
9	02.11.2020	80	45	7.2	25.0	0.76	<0.2	<20
10	03.11.2020	73	33	9.7	21.1	0.74	<0.2	<20
11	09.11.2020	82	42	10.8	25.6	0.98	<0.2	<20
12	10.11.2020	89	48	8.5	29.6	0.79	<0.2	<20
13	16.11.2020	94	38	10.7	30.1	0.74	<0.2	<20
14	17.11.2020	108	63	12.2	34.7	1.18	<0.2	<20
15	23.11.2020	78	38	7.4	21.9	0.82	<0.2	<20
16	24.11.2020	92	45	11.7	29.1	0.98	<0.2	<20
17	30.11.2020	86	49	7.5	27.5	0.91	<0.2	<20
18	01.12.2020	101	57	10.2	32.2	0.99	<0.2	<20
19	07.12.2020	85	43	8.2	31.8	0.90	<0.2	<20
20	08.12.2020	97	59	10.2	30.2	1.10	<0.2	<20
21	14.12.2020	76	36	7.2	21.5	0.91	<0.2	<20
22	15.12.2020	105	63	11.9	32.5	1.10	<0.2	<20
23	21.12.2020	97	45	11.2	28.4	0.89	<0.2	<20
24	29.12.2020	91	56	9.1	27.5	0.92	<0.2	<20

End of Report

Checked By

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied. 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory.

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Gazette No. : 352, valid upto 08.02.2022

TEST REPORT

Test Report Number	RAA2112121	**Page Number**	Page 1 of 1
Date of Issue	12.01.2021	**Study Period**	1st October to 31st December, 2020
NAME & ADDRESS OF CUSTOMER		**SAMPLE DETAILS**	
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602			
Issued to: **EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi		Sample Description : Ambient Air Sampling Location : **Chak Sijbere** Sampling done by : JPT Lab Representative Sampling Duration : 24 Hr. (except CO for 1 hr)	

AMBIENT AIR QUALITY ANALYSIS TEST RESULTS

S.No	Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)	CO (mg/m³)	HF (µg/m³)	NH_3 (µg/m3)
	Test Method	IS: 5182 (Part-23)	JPT/CH/SOP/ AIR/06	IS: 5182 (Part-2)	IS: 5182 (Part- 6)	IS: 5182 (Part-10)	JPT/CH/S OP/AIR/09	Indophenol method
	*NAAQS	100	60	80	80	04	-	400
1	07.10.2020	53	27	5.8	7.9	0.32	<0.2	<20
2	08.10.2020	50	19	5.7	12.5	0.26	<0.2	<20
3	14.10.2020	48	21	BDL	8.1	0.29	<0.2	<20
4	15.10.2020	45	22	5.9	9.6	0.27	<0.2	<20
5	21.10.2020	47	18	5.8	10.4	0.28	<0.2	<20
6	22.10.2020	45	23	6.3	8.3	0.27	<0.2	<20
7	28.10.2020	43	16	BDL	9.5	0.26	<0.2	<20
8	29.10.2020	51	25	BDL	12.8	0.32	<0.2	<20
9	04.11.2020	46	22	5.6	9.3	0.28	<0.2	<20
10	05.11.2020	49	18	BDL	9.1	0.29	<0.2	<20
11	11.11.2020	44	20	BDL	7.8	0.26	<0.2	<20
12	12.11.2020	47	21	5.9	10.8	0.32	<0.2	<20
13	18.11.2020	50	21	BDL	9.1	0.30	<0.2	<20
14	19.11.2020	39	24	6.2	14.2	0.23	<0.2	<20
15	25.11.2020	46	22	BDL	8.8	0.28	<0.2	<20
16	26.11.2020	48	24	5.6	9.8	0.32	<0.2	<20
17	02.12.2020	44	18	BDL	8.5	0.26	<0.2	<20
18	03.12.2020	39	17	5.9	10.5	0.23	<0.2	<20
19	09.12.2020	48	22	BDL	12.7	0.25	<0.2	<20
20	10.12.2020	46	20	6.3	10.7	0.28	<0.2	<20
21	16.12.2020	42	16	BDL	8.3	0.27	<0.2	<20
22	17.12.2020	40	20	BDL	12.9	0.24	<0.2	<20
23	22.12.2020	48	22	5.5	9.2	0.29	<0.2	<20
24	30.12.2020	49	16	BDL	10.5	0.29	<0.2	<20

End of Report

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Regd Office: G-4A, Vikas Deep Building, 18 District Centre Laxmi Nagar, Delhi- 110092 Tel: +91-11-22026111

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Gazette No. : 352, valid upto 08.02.2022

TEST REPORT

Test Report Number	RAA2112122	**Page Number**	Page 1 of 1
Date of Issue	12.01.2021	**Study Period**	1st October to 31st December, 2020
NAME & ADDRESS OF CUSTOMER		**SAMPLE DETAILS**	
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602			
Issued to: **EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi		Sample Description : Ambient Air Sampling Location : **Gandhinagar** Sampling done by : JPT Lab Representative Sampling Duration : 24 Hr. (except CO for 1 hr)	

AMBIENT AIR QUALITY ANALYSIS TEST RESULTS

S.No	Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)	CO (mg/m³)	HF (µg/m³)	NH_3 (µg/m3)
	Test Method	IS: 5182 (Part-23)	JPT/CH/SOP/ AIR/06	IS: 5182 (Part-2)	IS: 5182 (Part- 6)	IS: 5182 (Part-10)	JPT/CH/S OP/AIR/09	Indophenol method
	*NAAQS	100	60	80	80	04	-	400
1	07.10.2020	74	34	8.4	20.4	1.11	<0.2	<20
2	08.10.2020	90	47	10.3	27.1	1.42	<0.2	<20
3	14.10.2020	70	41	6.2	23.6	1.09	<0.2	<20
4	15.10.2020	82	58	8.1	26.2	1.32	<0.2	<20
5	21.10.2020	96	50	9.5	31.2	0.96	<0.2	<20
6	22.10.2020	89	43	12.6	33.4	1.32	<0.2	<20
7	28.10.2020	106	62	10.1	28.5	1.20	<0.2	<20
8	29.10.2020	79	38	8.8	22.9	1.22	<0.2	<20
9	04.11.2020	61	40	10.7	25.2	0.91	<0.2	<20
10	05.11.2020	68	38	12.3	27.5	1.29	<0.2	<20
11	11.11.2020	90	47	11.3	24.9	1.35	<0.2	<20
12	12.11.2020	75	38	9.1	29.4	1.48	<0.2	<20
13	18.11.2020	103	59	10.7	27.6	1.82	<0.2	<20
14	19.11.2020	79	58	11.8	32.4	1.49	<0.2	<20
15	25.11.2020	84	49	9.7	25.8	1.02	<0.2	<20
16	26.11.2020	82	55	6.8	22.2	1.14	<0.2	<20
17	02.12.2020	80	42	9.3	26.4	1.19	<0.2	<20
18	03.12.2020	75	55	11.9	29.6	0.98	<0.2	<20
19	09.12.2020	82	50	10.9	24.8	1.02	<0.2	<20
20	10.12.2020	89	52	9.6	21.5	1.13	<0.2	<20
21	16.12.2020	78	58	12.5	28.1	0.86	<0.2	<20
22	17.12.2020	86	42	8.6	20.3	0.97	<0.2	<20
23	22.12.2020	105	54	11.2	25.8	1.15	<0.2	<20
24	30.12.2020	74	38	10.9	27.4	1.22	<0.2	<20

End of Report

Test & Research Centre Sahibabad

Checked By

S. PANDEY Quality Manager

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RAA2112123	**Page Number**	Page 1 of 1
Date of Issue	12.01.2021	**Study Period**	1st October to 31st December, 2020
NAME & ADDRESS OF CUSTOMER		**SAMPLE DETAILS**	

Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.)
Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur,
PO + PS- Durgachak, West Bengal- 721602

Issued to:
EQMS India Pvt. Ltd.,
304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers,
Community Centre, Karkardooma, Delhi

Sample Description : Ambient Air
Sampling Location : **Prerona Enterprise, Uttar Chandranagar**
Sampling done by : JPT Lab Representative
Sampling Duration : 24 Hr. (except CO for 1 hr)

AMBIENT AIR QUALITY ANALYSIS TEST RESULTS

S.No	Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)	CO (mg/m³)	HF (µg/m³)	NH_3 (µg/m3)
	Test Method	IS: 5182 (Part-23)	JPT/CH/SOP/ AIR/06	IS: 5182 (Part-2)	IS: 5182 (Part- 6)	IS: 5182 (Part-10)	JPT/CH/S OP/AIR/09	Indophenol method
	*NAAQS	100	60	80	80	04	-	400
1	09.10.2020	48	28	5.6	8.9	0.29	<0.2	<20
2	10.10.2020	42	22	BDL	9.3	0.26	<0.2	<20
3	16.10.2020	46	23	5.8	9.9	0.28	<0.2	<20
4	17.10.2020	52	28	5.7	10.1	0.31	<0.2	<20
5	23.10.2020	45	21	BDL	9.3	0.27	<0.2	<20
6	24.10.2020	49	25	5.9	8.7	0.29	<0.2	<20
7	30.10.2020	53	25	6.1	9.3	0.32	<0.2	<20
8	31.10.2020	46	29	5.6	8.1	0.23	<0.2	<20
9	06.11.2020	52	30	5.7	9.7	0.31	<0.2	<20
10	07.11.2020	44	22	BDL	8.5	0.26	<0.2	<20
11	13.11.2020	50	26	5.6	9.5	0.30	<0.2	<20
12	15.11.2020	43	21	BDL	7.1	0.33	<0.2	<20
13	20.11.2020	40	19	BDL	8.4	0.24	<0.2	<20
14	21.11.2020	42	21	5.8	8.1	0.25	<0.2	<20
15	27.11.2020	51	24	BDL	9.5	0.31	<0.2	<20
16	28.11.2020	47	22	BDL	8.8	0.31	<0.2	<20
17	04.12.2020	43	27	BDL	8.2	0.26	<0.2	<20
18	05.12.2020	48	23	5.7	9.4	0.29	<0.2	<20
19	11.12.2020	55	30	6.2	8.2	0.25	<0.2	<20
20	12.12.2020	49	22	5.9	9.2	0.29	<0.2	<20
21	18.12.2020	53	25	6.1	8.4	0.27	<0.2	<20
22	23.12.2020	48	29	5.8	9.4	0.29	<0.2	<20
23	24.12.2020	44	21	5.6	8.6	0.26	<0.2	<20
24	31.12.2020	47	18	BDL	7.9	0.28	<0.2	<20

End of Report

Checked By

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RAA2112124	**Page Number**	Page 1 of 1
Date of Issue	12.01.2021	**Study Period**	1st October to 31st December, 2020
NAME & ADDRESS OF CUSTOMER		**SAMPLE DETAILS**	
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602			
Issued to: **EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi		Sample Description : Ambient Air Sampling Location : **Dhanumandal** Sampling done by : JPT Lab Representative Sampling Duration : 24 Hr. (except CO for 1 hr)	

AMBIENT AIR QUALITY ANALYSIS TEST RESULTS

S.No	Date	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)	CO (mg/m³)	HF (µg/m³)	NH_3 (µg/m3)
	Test Method	IS: 5182 (Part-23)	JPT/CH/SOP/AIR/06	IS: 5182 (Part-2)	IS: 5182 (Part- 6)	IS: 5182 (Part-10)	JPT/CH/SOP/AIR/09	Indophenol method
	*NAAQS	100	60	80	80	04	-	400
1	09.10.2020	46	17	5.6	10.7	0.28	<0.2	<20
2	10.10.2020	52	26	6.2	11.2	0.26	<0.2	<20
3	16.10.2020	44	22	BDL	8.5	0.26	<0.2	<20
4	17.10.2020	49	26	5.9	11.0	0.29	<0.2	<20
5	23.10.2020	53	28	BDL	11.9	0.25	<0.2	<20
6	24.10.2020	47	23	7.4	9.7	0.28	<0.2	<20
7	30.10.2020	43	19	6.1	10.2	0.26	<0.2	<20
8	31.10.2020	53	20	BDL	11.2	0.24	<0.2	<20
9	06.11.2020	45	19	5.6	11.0	0.27	<0.2	<20
10	07.11.2020	52	21	BDL	11.6	0.31	<0.2	<20
11	13.11.2020	42	15	8.1	10.2	0.25	<0.2	<20
12	15.11.2020	49	19	6.4	9.8	0.21	<0.2	<20
13	20.11.2020	44	23	6.3	9.0	0.26	<0.2	<20
14	21.11.2020	43	26	5.7	11.5	0.26	<0.2	<20
15	27.11.2020	48	22	7.3	11.0	0.29	<0.2	<20
16	28.11.2020	54	18	5.8	11.6	0.32	<0.2	<20
17	04.12.2020	51	20	6.1	11.2	0.31	<0.2	<20
18	05.12.2020	41	21	6.4	9.5	0.26	<0.2	<20
19	11.12.2020	50	26	5.9	11.3	0.25	<0.2	<20
20	12.12.2020	54	28	7.2	11.4	0.32	<0.2	<20
21	18.12.2020	48	23	BDL	10.3	0.27	<0.2	<20
22	23.12.2020	53	26	5.9	10.9	0.32	<0.2	<20
23	24.12.2020	45	21	5.6	10.3	0.28	<0.2	<20
24	31.12.2020	49	19	7.4	10.7	0.29	<0.2	<20

End of Report

Checked By

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2.The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RAA2112125	Page Number	Page 1 of 1
Date of Issue	12.01.2021	Study Period	1st October to 31st December, 2020
NAME & ADDRESS OF CUSTOMER		SAMPLE DETAILS	
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602			
Issued to: EQMS India Pvt. Ltd., 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi		Sample Description : Ambient Air Sampling Location : Ranafala Sampling done by : JPT Lab Representative Sampling Duration : 24 Hr. (except CO for 1 hr)	

AMBIENT AIR QUALITY ANALYSIS TEST RESULTS

S.No	Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	HF ($\mu g/m^3$)	NH_3 ($\mu g/m3$)
	Test Method	IS: 5182 (Part-23)	JPT/CH/SOP/ AIR/06	IS: 5182 (Part-2)	IS: 5182 (Part- 6)	IS: 5182 (Part-10)	JPT/CH/S OP/AIR/09	Indophenol method
	*NAAQS	100	60	80	80	04	-	400
1	05.10.2020	48	18	5.6	7.9	0.29	<0.2	<20
2	06.10.2020	52	26	6.2	12.5	0.26	<0.2	<20
3	12.10.2020	46	22	BDL	8.1	0.28	<0.2	<20
4	13.10.2020	52	26	5.9	9.6	0.31	<0.2	<20
5	19.10.2020	45	28	BDL	10.4	0.27	<0.2	<20
6	20.10.2020	49	23	5.9	8.3	0.29	<0.2	<20
7	26.10.2020	54	30	6.1	9.5	0.32	<0.2	<20
8	27.10.2020	49	19	5.7	12.8	0.28	<0.2	<20
9	02.11.2020	52	19	5.6	9.3	0.31	<0.2	<20
10	03.11.2020	41	21	BDL	7.5	0.24	<0.2	<20
11	09.11.2020	50	17	5.9	7.8	0.30	<0.2	<20
12	10.11.2020	47	19	5.7	10.8	0.33	<0.2	<20
13	16.11.2020	49	23	6.3	9.1	0.29	<0.2	<20
14	17.11.2020	48	26	5.7	12.5	0.29	<0.2	<20
15	23.11.2020	51	22	6.9	8.8	0.32	<0.2	<20
16	24.11.2020	49	18	5.8	9.8	0.28	<0.2	<20
17	30.11.2020	52	28	6.1	8.5	0.34	<0.2	<20
18	01.12.2020	48	21	5.7	10.5	0.27	<0.2	<20
19	07.12.2020	54	29	7.1	13.2	0.34	<0.2	<20
20	08.12.2020	49	28	5.7	10.7	0.29	<0.2	<20
21	14.12.2020	53	23	5.8	8.3	0.27	<0.2	<20
22	15.12.2020	48	26	5.9	10.5	0.29	<0.2	<20
23	21.12.2020	50	21	5.6	9.2	0.30	<0.2	<20
24	29.12.2020	54	23	6.4	10.5	0.32	<0.2	<20

End of Report

Checked By

Authorized Signatory

* Format No. JPT/7.8F-01 Issue No. 02 Issue Date 20.08.2020 Rev. No. 00

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Report Number	RNJ2025128	**Page Number**	Page 1 of 1
Job Order Number	JPT/NJ20/25128	**Customer Ref. Number**	-
Date of Issue	29.10.2020	**Sample Received On**	25.10.2020
Discipline Name	Chemical Testing	**Product Group Category**	Atmospheric Pollution (Ambient Noise)
NAME & ADDRESS OF CUSTOMER		**SAMPLE DETAILS**	

Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.)
Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur,
PO + PS- Durgachak, West Bengal- 721602

Issued to,
M/s, EQMS India Pvt. Ltd.,
304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers,
Community Centre, Karkardooma, Delhi

Sample Description	:	Ambient Noise
Weather Condition	:	Normal
Sampling Location	:	**Project Site**
Date of Monitoring	:	05.10.2020 to 06.10.2020
Monitoring Procedure	:	IS: 9989 & CPCB Guidelines
Monitoring Done By	:	JPT Lab Representative
Instrument Used	:	Sound level meter, Luttron make

TEST RESULTS

Ambient Noise

S. No.	Parameter	Unit	Observed Value	Test Method
1.	Equivalent Noise Level, Leq (day*)	dB(A)	58.6	IS: 9989 & JPT/CH/SOP/NSE-01
2.	Equivalent Noise Level, Leq (Night)**	dB(A)	47.5	

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The Noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Note *Day Time mean 6 am to 10 P.M
**Night Time mean 10 p m to 6 A.M

End of Report

Checked By

For J P Test & Research Centre

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Report Number	RNJ2025129	**Page Number**	Page 1 of 1
Job Order Number	JPT/NJ20/25129	**Customer Ref. Number**	-
Date of Issue	29.10.2020	**Sample Received On**	25.10.2020
Discipline Name	Chemical Testing	**Product Group Category**	Atmospheric Pollution (Ambient Noise)

NAME & ADDRESS OF CUSTOMER	SAMPLE DETAILS

Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.)
Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur,
PO + PS- Durgachak, West Bengal- 721602

Issued to,
M/s, EQMS India Pvt. Ltd.,
304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi

Sample Description	:	Ambient Noise
Weather Condition	:	Normal
Sampling Location	:	**Haldia High School**
Date of Monitoring	:	06.10.2020 to 07.10.2020
Monitoring Procedure	:	IS: 9989 & CPCB Guidelines
Monitoring Done By	:	JPT Lab Representative
Instrument Used	:	Sound level meter, Luttron make

TEST RESULTS

Ambient Noise

S. No.	Parameter	Unit	Observed Value	Test Method
1.	Equivalent Noise Level, Leq (day*)	dB(A)	53.5	IS: 9989 & JPT/CH/SOP/NSE-01
2.	Equivalent Noise Level, Leq (Night)**	dB(A)	40.8	

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The Noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Note: *Day Time mean 6 am to 10 P.M
**Night Time mean 10 p.m to 6 A.M

End of Report

Test & Research Centre Sahibabad

Checked By

For J P Test & Research Centre

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2.The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Report Number	RNJ2025130	**Page Number**	Page 1 of 1
Job Order Number	JPT/NJ20/25130	**Customer Ref. Number**	-
Date of Issue	29.10.2020	**Sample Received On**	25.10.2020
Discipline Name	Chemical Testing	**Product Group Category**	Atmospheric Pollution (Ambient Noise)
NAME & ADDRESS OF CUSTOMER		**SAMPLE DETAILS**	

Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.)
Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur,
PO + PS- Durgachak, West Bengal- 721602

Issued to,
M/s, EQMS India Pvt. Ltd.,
304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers,
Community Centre, Karkardooma, Delhi

Sample Description	:	Ambient Noise
Weather Condition	:	Normal
Sampling Location	:	**Haldia Subdivision HospitalTriveni Hanuman MadirPali**
Date of Monitoring	:	12.10.2020 to 13.10.2020
Monitoring Procedure	:	IS: 9989 & CPCB Guidelines
Monitoring Done By	:	JPT Lab Representative
Instrument Used	:	Sound level meter, Luttron make

TEST RESULTS

Ambient Noise

S. No.	Parameter	Unit	Observed Value	Test Method
1.	Equivalent Noise Level, Leq (day*)	dB(A)	57.6	IS: 9989 & JPT/CH/SOP/NSE-01
2.	Equivalent Noise Level, Leq (Night)**	dB(A)	48.5	

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The Noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Note *Day Time mean 6 am to 10 P.M
**Night Time mean 10 p.m to 6 A.M

End of Report

Checked By

For J P Test & Research Centre

S. PANDEY
Quality Manager

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2.The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied .4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

Laboratory: 4/54, Site-IV, Sahibabad Industrial Area, Ghaziabad, (UP) Pin-201010 Tel: 0120-4345989, 9910833356 Email: jptesthouse@gmail.com
Regd Office: G-4A, Vikas Deep Building, 18 District Centre Laxmi Nagar, Delhi- 110092 Tel: +91-11-22026111

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TEST REPORT

Report Number	RNJ2025131	**Page Number**	Page 1 of 1
Job Order Number	JPT/NJ20/25131	**Customer Ref. Number**	-
Date of Issue	29.10.2020	**Sample Received On**	25.10.2020
Discipline Name	Chemical Testing	**Product Group Category**	Atmospheric Pollution (Ambient Noise)

NAME & ADDRESS OF CUSTOMER | **SAMPLE DETAILS**

Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.)
Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur,
PO + PS- Durgachak, West Bengal- 721602

Issued to,
M/s, EQMS India Pvt. Ltd.,
304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi

Sample Description	:	Ambient Noise
Weather Condition	:	Normal
Sampling Location	:	**Near Durgachak Railway Station**
Date of Monitoring	:	08.10.2020 to 09.10.2020
Monitoring Procedure	:	IS: 9989 & CPCB Guidelines
Monitoring Done By	:	JPT Lab Representative
Instrument Used	:	Sound level meter, Luttron make

TEST RESULTS

Ambient Noise

S. No.	Parameter	Unit	Observed Value	Test Method
1.	Equivalent Noise Level, Leq (day*)	dB(A)	63.8	IS: 9989 & JPT/CH/SOP/NSE-01
2.	Equivalent Noise Level, Leq (Night)**	dB(A)	56.9	

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The Noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Note: *Day Time mean 6 am to 10 P.M
**Night Time mean 10 p.m to 6 A.M

End of Report

Checked By

For J P Test & Research Centre

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2.The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied. 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

Laboratory: 4/54, Site-IV, Sahibabad Industrial Area, Ghaziabad, (UP) Pin-201010 Tel: 0120-4345989, 9910833356 Email:jptesthouse@gmail.com
Regd Office: G-4A, Vikas Deep Building, 18 District Centre Laxmi Nagar, Delhi- 110092 Tel: +91-11-22026111

TEST REPORT

Report Number	RNJ2025132	**Page Number**	Page 1 of 1
Job Order Number	JPT/NJ20/25132	**Customer Ref. Number**	-
Date of Issue	29.10.2020	**Sample Received On**	25.10.2020
Discipline Name	Chemical Testing	**Product Group Category**	Atmospheric Pollution (Ambient Noise)

NAME & ADDRESS OF CUSTOMER	**SAMPLE DETAILS**		
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602			
Issued to, **M/s, EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi	Sample Description	:	Ambient Noise
	Weather Condition	:	Normal
	Sampling Location	:	**Durgachak**
	Date of Monitoring	:	14.10.2020 to 15.10.2020
	Monitoring Procedure	:	IS: 9989 & CPCB Guidelines
	Monitoring Done By	:	JPT Lab Representative
	Instrument Used	:	Sound level meter, Luttron make

TEST RESULTS

Ambient Noise

S. No.	Parameter	Unit	Observed Value	Test Method
1.	Equivalent Noise Level, Leq (day*)	dB(A)	53.4	IS: 9989 & JPT/CH/SOP/NSE-01
2.	Equivalent Noise Level, Leq (Night)**	dB(A)	40.9	

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The Noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Note: *Day Time mean 6 am to 10 P.M
**Night Time mean 10 p.m to 6 A.M

End of Report

Checked By

For J.P. Test & Research Centre

S. PANDEY
Quality Manager

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Report Number	RNJ2025132	**Page Number**	Page 1 of 1
Job Order Number	JPT/NJ20/25132	**Customer Ref. Number**	-
Date of Issue	29.10.2020	**Sample Received On**	25.10.2020
Discipline Name	Chemical Testing	**Product Group Category**	Atmospheric Pollution (Ambient Noise)
NAME & ADDRESS OF CUSTOMER		**SAMPLE DETAILS**	

Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.)
Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur,
PO + PS- Durgachak, West Bengal- 721602

Issued to,
M/s, EQMS India Pvt. Ltd.,
304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers,
Community Centre, Karkardooma, Delhi

Sample Description	:	Ambient Noise
Weather Condition	:	Normal
Sampling Location	:	**IOC Bus Stop**
Date of Monitoring	:	16.10.2020 to 17.10.2020
Monitoring Procedure	:	IS: 9989 & CPCB Guidelines
Monitoring Done By	:	JPT Lab Representative
Instrument Used	:	Sound level meter, Luttron make

TEST RESULTS

Ambient Noise

S. No.	Parameter	Unit	Observed Value	Test Method
1.	Equivalent Noise Level, Leq (day*)	dB(A)	62.4	IS: 9989 & JPT/CH/SOP/NSE-01
2.	Equivalent Noise Level, Leq (Night)**	dB(A)	53.9	

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The Noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Note: *Day Time mean 6.am to 10 P.M
**Night Time mean 10.p.m to 6 A.M

End of Report

Checked By

For J P Test & Research Centre

S. PANDEY
Quality Manager

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied. 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Report Number	RNJ2025133	**Page Number**	Page 1 of 1
Job Order Number	JPT/NJ20/25133	**Customer Ref. Number**	-
Date of Issue	29.10.2020	**Sample Received On**	25.10.2020
Discipline Name	Chemical Testing	**Product Group Category**	Atmospheric Pollution (Ambient Noise)
NAME & ADDRESS OF CUSTOMER		**SAMPLE DETAILS**	

Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.)
Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur,
PO + PS- Durgachak, West Bengal- 721602

Issued to,
M/s, EQMS India Pvt. Ltd.,
304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers,
Community Centre, Karkardooma, Delhi

Sample Description	:	Ambient Noise
Weather Condition	:	Normal
Sampling Location	:	**Tridib Kumar Gir, Haldia**
Date of Monitoring	:	18.10.2020 to 19.10.2020
Monitoring Procedure	:	IS: 9989 & CPCB Guidelines
Monitoring Done By	:	JPT Lab Representative
Instrument Used	:	Sound level meter, Luttron make

TEST RESULTS

Ambient Noise

S. No.	Parameter	Unit	Observed Value	Test Method
1.	Equivalent Noise Level, Leq (day*)	dB(A)	52.4	IS: 9989 & JPT/CH/SOP/NSE-01
2.	Equivalent Noise Level, Leq (Night)**	dB(A)	39.6	

Area Code	Category of Area /Zone	Limit as per E(P)A 1986 (The Noise Pollution Regulation & Control Rule, 2006) in dB(A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Note:*Day Time mean 6 am to 10 P.M
**Night Time mean 10 p.m to 6 A.M

End of Report

Checked By

For J P Test & Research Centre

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RWJ2025134	**Page Number**	Page 1 of 2
Job Order Number	JPT/WJ20/25134	**Customer Ref. Number**	-
Date of Issue	02.11.2020	**Sample Received On**	25.10.2020

NAME & ADDRESS OF CUSTOMER	SAMPLE DETAILS
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602	
Issued to, **M/s EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi	Sample Description : One Sample of Water Described as "Ground Water Collected on 23.10.2020" Sampling done by : JPT Lab Representative Location : **Near Project Site** Sampling Protocol : IS: 3025 (Part-1) & IS: 1622 Sample packing : Plastic Container + Glass Bottle Quantity : 5 Ltr + 500ml Analysis done on : 26.10.2020 to 01.11.2020

RESULTS

WATER QUALITY ANALYSIS

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
1	pH value	-	6.5-8.5	No Relaxation	7.35	IS: 3025 (Part-11)1983RA2017
2	True Colour	Hazen	5	15	<5	IS: 3025 (Part-04)1983RA2017
3	Turbidity	NTU	1	5	<1	IS: 3025 (Part-10)1984RA2017
4	Conductivity	µmhos/cm	-	-	1695	IS: 3025 (Part-14)2013RA2019
5	Total Dissolved Solids	mg/l	500	2000	1052	IS: 3025 (Part-16)1984RA2017
6	Total Suspended solids	mg/l	-	-	<5	IS: 3025 (Part-17)1984RA2017
7	Total Alkalinity as $CaCO_3$	mg/l	200	600	358	IS: 3025 (Part-23)1986RA2019
8	Total Hardness (as $CaCO_3$)	mg/l	200	600	412	IS: 3025 (Part-21)2009RA2019
9	Calcium (as Ca)	mg/l	75	200	89	IS: 3025 (Part-40)1991RA2019
10	Magnesium (as Mg^{2+})	mg/l	30	100	46.2	APHA 23rd Ed, 3500 Mg B
11	Chlorides (as Cl)	mg/l	250	1000	278	IS: 3025 (Part-32)1988RA2019
12	Fluoride (as F)	mg/l	1	1.5	0.6	APHA 23rd Ed, 4500 F (D)
13	Sulphate (as SO_4)	mg/l	200	400	102	IS: 3025 (Part-24)1986RA2019

Continued...

Test & Research Centre Sahibabad

Checked By

For J P Test & Research Centre

S. PANDEY

Authorized Signatory: Chemical

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2.The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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Regd Office: G-4A, Vikas Deep Building, 18 District Centre Laxmi Nagar, Delhi- 110092 Tel: +91-11-22026111

TEST REPORT

Test Report Number	RWJ2025134	Page Number	Page 2 of 2
Job Order Number	JPT/WJ20/25134	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
14	Iron (as Fe)	mg/l	0.3	No Relaxation	0.19	APHA 23rd Ed, 3111B
15	Nitrate(as NO_3)	mg/l	45	No Relaxation	18.4	IS: 3025 (Part-34)1988RA2019
16	Copper (as Cu)	mg/l	0.01	1.5	<0.05	APHA 23rd Ed, 3111B
17	Boron (as B)	mg/l	0.5	2.4	0.2	APHA 23rd Edi. 4500 B
18	Barium (as Ba)	mg/l	0.7	No Relaxation	<0.1	APHA 23rd Ed
19	Manganese (as Mn)	mg/l	0.1	0.3	<0.05	APHA 23rd Ed, 3111B
20	Phenolic Compounds (as C_6H_5OH)	mg/l	0.001	0.002	<0.001	IS: 3025 (Part- 43)
21	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3114
22	Silver (as Ag)	mg/l	0.1	No Relaxation	<0.02	APHA 23rd Ed, 3111B
23	Sulphide (as H2S)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-29)1986 RA2019
24	Aluminum (as Al)	mg/l	0.03	0.2	<0.05	APHA 23rd Edi. 3500 Al-B
25	Zinc (as Zn)	mg/l	5	15	0.34	APHA 23rd Ed, 3111B
26	Cadmium (as Cd)	mg/l	0.003	No Relaxation	<0.003	APHA 23rd Ed, 3111B
27	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-27)1986 RA2019
28	Lead (as Pb)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
29	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	APHA 23rd Ed, 3112
30	Nickel (as Ni)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
31	Total Arsenic (as As)	mg/l	0.01	0.05	<0.025	APHA 23rd Ed, 3114
32	Total Chromium (as Cr)	mg/l	0.05	No Relaxation	<0.05	APHA 23rd Ed, 3111D
Bacteriological Parameters						
33	Total Coliform	Per100ml	Shall not be detectable		Absent	IS : 15185-2016
34	*E.Coli*	*E.coli/100ml*	Shall not be detectable		Absent	IS : 15185-2016

End of Report

Checked By

For J P Test & Research Centre

S. Microbiologist

Chemical
Authorized Signatory

* Format No. JPT/7.8F-05 Issue No. 02 Issue Date 20.08.2020 Rev. No. 00

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

TEST REPORT

Test Report Number	RWJ2025135	Page Number	Page 1 of 2
Job Order Number	JPT/WJ20/25135	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

NAME & ADDRESS OF CUSTOMER	SAMPLE DETAILS
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602	
Issued to, **M/s EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi	Sample Description : One Sample of Water Described as "Ground Water Collected on 23.10.2020" Sampling done by : JPT Lab Representative Location : **High School Haldia** Sampling Protocol : IS: 3025 (Part-1) & IS: 1622 Sample packing : Plastic Container + Glass Bottle Quantity : 5 Ltr + 500ml Analysis done on : 26.10.2020 to 01.11.2020

RESULTS

WATER QUALITY ANALYSIS

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
1	pH value	-	6.5-8.5	No Relaxation	7.28	IS: 3025 (Part-11)1983RA2017
2	True Colour	Hazen	5	15	<5	IS: 3025 (Part-04)1983RA2017
3	Turbidity	NTU	1	5	<1	IS: 3025 (Part-10)1984RA2017
4	Conductivity	µmhos/cm	-	-	1840	IS: 3025 (Part-14)2013RA2019
5	Total Dissolved Solids	mg/l	500	2000	1178	IS: 3025 (Part-16)1984RA2017
6	Total Suspended solids	mg/l	-	-	<5	IS: 3025 (Part-17)1984RA2017
7	Total Alkalinity as $CaCO_3$	mg/l	200	600	312	IS: 3025 (Part-23)1986RA2019
8	Total Hardness (as $CaCO_3$)	mg/l	200	600	454	IS: 3025 (Part-21)2009RA2019
9	Calcium (as Ca)	mg/l	75	200	108	IS: 3025 (Part-40)1991RA2019
10	Magnesium (as Mg^{2+})	mg/l	30	100	44.8	APHA 23rd Ed, 3500 Mg B
11	Chlorides (as Cl)	mg/l	250	1000	356	IS: 3025 (Part-32)1988RA2019
12	Fluoride (as F)	mg/l	1	1.5	0.4	APHA 23rd Ed, 4500 F (D)
13	Sulphate (as SO_4)	mg/l	200	400	108	IS: 3025 (Part-24)1986RA2019

Continued...

Checked By

For J P Test & Research Centre

S. PANDEY
Quality Manager

Authorized Signatory: Chemical

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

TEST REPORT

Test Report Number	RWJ2025135	Page Number	Page 2 of 2
Job Order Number	JPT/WJ20/25135	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
14	Iron (as Fe)	mg/l	0.3	No Relaxation	0.21	APHA 23rd Ed, 3111B
15	Nitrate(as NO_3)	mg/l	45	No Relaxation	13.8	IS: 3025 (Part-34)1988RA2019
16	Copper (as Cu)	mg/l	0.01	1.5	<0.05	APHA 23rd Ed, 3111B
17	Boron (as B)	mg/l	0.5	2.4	0.1	APHA 23rd Edi. 4500 B
18	Barium (as Ba)	mg/l	0.7	No Relaxation	<0.1	APHA 23rd Ed
19	Manganese (as Mn)	mg/l	0.1	0.3	<0.05	APHA 23rd Ed, 3111B
20	Phenolic Compounds (as C_6H_5OH)	mg/l	0.001	0.002	<0.001	IS: 3025 (Part-43)1992 RA2019
21	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3114
22	Silver (as Ag)	mg/l	0.1	No Relaxation	<0.02	APHA 23rd Ed, 3111B
23	Sulphide (as H2S)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-29)1986 RA2019
24	Aluminum (as Al)	mg/l	0.03	0.2	<0.05	APHA 23rd Edi. 3500 Al-B
25	Zinc (as Zn)	mg/l	5	15	0.28	APHA 23rd Ed, 3111B
26	Cadmium (as Cd)	mg/l	0.003	No Relaxation	<0.003	APHA 23rd Ed, 3111B
27	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-27)1986 RA2019
28	Lead (as Pb)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
29	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	APHA 23rd Ed, 3112
30	Nickel (as Ni)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
31	Total Arsenic (as As)	mg/l	0.01	0.05	<0.025	APHA 23rd Ed, 3114
32	Total Chromium (as Cr)	mg/l	0.05	No Relaxation	<0.05	APHA 23rd Ed, 3111D
Bacteriological Parameters						
33	Total Coliform	Per100ml	Shall not be detectable		Absent	IS : 15185-2016
34	*E.Coli*	*E.coli/100ml*	Shall not be detectable		Absent	IS : 15185-2016

End of Report

Checked By

For J P Test & Research Centre

S. Microbiologist

Chemical

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RWJ2025136	Page Number	Page 1 of 2
Job Order Number	JPT/WJ20/25136	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

NAME & ADDRESS OF CUSTOMER	SAMPLE DETAILS
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602	
Issued to, M/s EQMS India Pvt. Ltd., 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi	Sample Description : One Sample of Water Described as "Ground Water Collected on 23.10.2020" Sampling done by : JPT Lab Representative Location : **Khanjanchak** Sampling Protocol : IS: 3025 (Part-1) & IS: 1622 Sample packing : Plastic Container + Glass Bottle Quantity : 5 Ltr + 500ml Analysis done on : 26.10.2020 to 01.11.2020

RESULTS

WATER QUALITY ANALYSIS

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
1	pH value	-	6.5-8.5	No Relaxation	6.92	IS: 3025 (Part-11)1983RA2017
2	True Colour	Hazen	5	15	<5	IS: 3025 (Part-04)1983RA2017
3	Turbidity	NTU	1	5	<1	IS: 3025 (Part-10)1984RA2017
4	Conductivity	µmhos/cm	-	-	1115	IS: 3025 (Part-14)2013RA2019
5	Total Dissolved Solids	mg/l	500	2000	670	IS: 3025 (Part-16)1984RA2017
6	Total Suspended solids	mg/l	-	-	<5	IS: 3025 (Part-17)1984RA2017
7	Total Alkalinity as $CaCO_3$	mg/l	200	600	228	IS: 3025 (Part-23)1986RA2019
8	Total Hardness (as $CaCO_3$)	mg/l	200	600	252	IS: 3025 (Part-21)2009RA2019
9	Calcium (as Ca)	mg/l	75	200	61	IS: 3025 (Part-40)1991RA2019
10	Magnesium (as Mg^{2+})	mg/l	30	100	24.2	APHA 23rd Ed, 3500 Mg B
11	Chlorides (as Cl)	mg/l	250	1000	152	IS: 3025 (Part-32)1988RA2019
12	Fluoride (as F)	mg/l	1	1.5	0.5	APHA 23rd Ed, 4500 F (D)
13	Sulphate (as SO_4)	mg/l	200	400	64	IS: 3025 (Part-24)1986RA2019

Continued...

Test & Research Centre Sahibabad

Checked By

For J P Test & Research Centre

S PANDEY

Authorized Signatory; Chemical

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2.The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

Laboratory: 4/54, Site-IV, Sahibabad Industrial Area, Ghaziabad, (UP) Pin-201010 Tel: 0120-4345980, 9910833356 Email:jptesthouse@gmail.com

Regd Office: G-4A, Vikas Deep Building, 18 District Centre Laxmi Nagar, Delhi- 110092 Tel: +91-11-22026111

TEST REPORT

Test Report Number	RWJ2025136	**Page Number**	Page 2 of 2
Job Order Number	JPT/WJ20/25136	**Customer Ref. Number**	-
Date of Issue	02.11.2020	**Sample Received On**	25.10.2020

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
14	Iron (as Fe)	mg/l	0.3	No Relaxation	0.13	APHA 23rd Ed, 3111B
15	Nitrate(as NO_3)	mg/l	45	No Relaxation	10.6	IS: 3025 (Part-34)1988RA2019
16	Copper (as Cu)	mg/l	0.01	1.5	<0.05	APHA 23rd Ed, 3111B
17	Boron (as B)	mg/l	0.5	2.4	0.1	APHA 23rd Edi. 4500 B
18	Barium (as Ba)	mg/l	0.7	No Relaxation	<0.1	APHA 23rd Ed
19	Manganese (as Mn)	mg/l	0.1	0.3	<0.05	APHA 23rd Ed, 3111B
20	Phenolic Compounds (as C_6H_5OH)	mg/l	0.001	0.002	<0.001	IS: 3025 (Part-43)1992 RA2019
21	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3114
22	Silver (as Ag)	mg/l	0.1	No Relaxation	<0.02	APHA 23rd Ed, 3111B
23	Sulphide (as H2S)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-29)1986 RA2019
24	Aluminum (as Al)	mg/l	0.03	0.2	<0.05	APHA 23rd Edi. 3500 Al-B
25	Zinc (as Zn)	mg/l	5	15	0.22	APHA 23rd Ed, 3111B
26	Cadmium (as Cd)	mg/l	0.003	No Relaxation	<0.003	APHA 23rd Ed, 3111B
27	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-27)1986 RA2019
28	Lead (as Pb)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
29	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	APHA 23rd Ed, 3112
30	Nickel (as Ni)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
31	Total Arsenic (as As)	mg/l	0.01	0.05	<0.025	APHA 23rd Ed, 3114
32	Total Chromium (as Cr)	mg/l	0.05	No Relaxation	<0.05	APHA 23rd Ed, 3111D
Bacteriological Parameters						
33	Total Coliform	Per100ml	Shall not be detectable		Absent	IS : 15185-2016
34	*E.Coli*	*E.coli/100ml*	Shall not be detectable		Absent	IS : 15185-2016

End of Report

Checked By

For J P Test & Research Centre

S. Microbiologist

Chemical

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RWJ2025137	Page Number	Page 1 of 2
Job Order Number	JPT/WJ20/25137	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

NAME & ADDRESS OF CUSTOMER	SAMPLE DETAILS
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602	
Issued to, **M/s EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi	Sample Description : One Sample of Water Described as "Ground Water Collected on 23.10.2020" Sampling done by : JPT Lab Representative Location : **Basudevpur** Sampling Protocol : IS: 3025 (Part-1) & IS: 1622 Sample packing : Plastic Container + Glass Bottle Quantity : 5 Ltr + 500ml Analysis done on : 26.10.2020 to 01.11.2020

RESULTS

WATER QUALITY ANALYSIS

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
1	pH value	-	6.5-8.5	No Relaxation	7.21	IS: 3025 (Part-11)1983RA2017
2	True Colour	Hazen	5	15	<5	IS: 3025 (Part-04)1983RA2017
3	Turbidity	NTU	1	5	<1	IS: 3025 (Part-10)1984RA2017
4	Conductivity	µmhos/cm	-	-	1062	IS: 3025 (Part-14)2013RA2019
5	Total Dissolved Solids	mg/l	500	2000	638	IS: 3025 (Part-16)1984RA2017
6	Total Suspended solids	mg/l	-	-	<5	IS: 3025 (Part-17)1984RA2017
7	Total Alkalinity as $CaCO_3$	mg/l	200	600	146	IS: 3025 (Part-23)1986RA2019
8	Total Hardness (as $CaCO_3$)	mg/l	200	600	270	IS: 3025 (Part-21)2009RA2019
9	Calcium (as Ca)	mg/l	75	200	64	IS: 3025 (Part-40)1991RA2019
10	Magnesium (as Mg^{2+})	mg/l	30	100	26.8	APHA 23rd Ed, 3500 Mg B
11	Chlorides (as Cl)	mg/l	250	1000	182	IS: 3025 (Part-32)1988RA2019
12	Fluoride (as F)	mg/l	1	1.5	0.6	APHA 23rd Ed, 4500 F (D)
13	Sulphate (as SO_4)	mg/l	200	400	68	IS: 3025 (Part-24)1986RA2019

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Test & Research Centre Sahibabad

Checked By

For J P Test & Research Centre

Authorized Signatory: Chemical

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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Regd Office: G-4A, Vikas Deep Building, 18 District Centre Laxmi Nagar, Delhi- 110092 Tel: +91-11-22026111

TEST REPORT

Test Report Number	RWJ2025137	Page Number	Page 2 of 2
Job Order Number	JPT/WJ20/25137	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
14	Iron (as Fe)	mg/l	0.3	No Relaxation	0.16	APHA 23rd Ed, 3111B
15	Nitrate(as NO_3)	mg/l	45	No Relaxation	14.2	IS: 3025 (Part-34)1988RA2019
16	Copper (as Cu)	mg/l	0.01	1.5	<0.05	APHA 23rd Ed, 3111B
17	Boron (as B)	mg/l	0.5	2.4	0.1	APHA 23rd Edi. 4500 B
18	Barium (as Ba)	mg/l	0.7	No Relaxation	<0.1	APHA 23rd Ed
19	Manganese (as Mn)	mg/l	0.1	0.3	<0.05	APHA 23rd Ed, 3111B
20	Phenolic Compounds (as C_6H_5OH)	mg/l	0.001	0.002	<0.001	IS: 3025 (Part-43)1992 RA2019
21	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3114
22	Silver (as Ag)	mg/l	0.1	No Relaxation	<0.02	APHA 23rd Ed, 3111B
23	Sulphide (as H2S)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-29)1986 RA2019
24	Aluminum (as Al)	mg/l	0.03	0.2	<0.05	APHA 23rd Edi. 3500 Al-B
25	Zinc (as Zn)	mg/l	5	15	0.26	APHA 23rd Ed, 3111B
26	Cadmium (as Cd)	mg/l	0.003	No Relaxation	<0.003	APHA 23rd Ed, 3111B
27	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-27)1986 RA2019
28	Lead (as Pb)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
29	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	APHA 23rd Ed, 3112
30	Nickel (as Ni)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
31	Total Arsenic (as As)	mg/l	0.01	0.05	<0.025	APHA 23rd Ed, 3114
32	Total Chromium (as Cr)	mg/l	0.05	No Relaxation	<0.05	APHA 23rd Ed, 3111D
Bacteriological Parameters						
33	Total Coliform	Per100ml	Shall not be detectable		Absent	IS : 15185-2016
34	*E.Coli*	*E.coli/100ml*	Shall not be detectable		Absent	IS : 15185-2016

End of Report

Checked By

For J P Test & Research Centre

S. Microbiologist

Chemical

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2.The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RWJ2025138	Page Number	Page 1 of 2
Job Order Number	JPT/WJ20/25138	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

NAME & ADDRESS OF CUSTOMER	SAMPLE DETAILS
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602	
Issued to, **M/s EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi	Sample Description : One Sample of Water Described as "Ground Water Collected on 23.10.2020" Sampling done by : JPT Lab Representative Location : **Panchak** Sampling Protocol : IS: 3025 (Part-1) & IS: 1622 Sample packing : Plastic Container + Glass Bottle Quantity : 5 Ltr + 500ml Analysis done on : 26.10.2020 to 01.11.2020

RESULTS

WATER QUALITY ANALYSIS

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
1	pH value	-	6.5-8.5	No Relaxation	7.35	IS: 3025 (Part-11)1983RA2017
2	True Colour	Hazen	5	15	<5	IS: 3025 (Part-04)1983RA2017
3	Turbidity	NTU	1	5	<1	IS: 3025 (Part-10)1984RA2017
4	Conductivity	µmhos/cm	-	-	1082	IS: 3025 (Part-14)2013RA2019
5	Total Dissolved Solids	mg/l	500	2000	645	IS: 3025 (Part-16)1984RA2017
6	Total Suspended solids	mg/l	-	-	<5	IS: 3025 (Part-17)1984RA2017
7	Total Alkalinity as $CaCO_3$	mg/l	200	600	248	IS: 3025 (Part-23)1986RA2019
8	Total Hardness (as $CaCO_3$)	mg/l	200	600	296	IS: 3025 (Part-21)2009RA2019
9	Calcium (as Ca)	mg/l	75	200	72	IS: 3025 (Part-40)1991RA2019
10	Magnesium (as Mg^{2+})	mg/l	30	100	28.2	APHA 23rd Ed, 3500 Mg B
11	Chlorides (as Cl)	mg/l	250	1000	128	IS: 3025 (Part-32)1988RA2019
12	Fluoride (as F)	mg/l	1	1.5	0.5	APHA 23rd Ed, 4500 F (D)
13	Sulphate (as SO_4)	mg/l	200	400	62	IS: 3025 (Part-24)1986RA2019

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Test & Research Centre Sahibabad

Checked By

For J P Test & Research Centre

S. PANDEY

Authorized Signatory: Chemical

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2.The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RWJ2025138	**Page Number**	Page 2 of 2
Job Order Number	JPT/WJ20/25138	**Customer Ref. Number**	-
Date of Issue	02.11.2020	**Sample Received On**	25.10.2020

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
14	Iron (as Fe)	mg/l	0.3	No Relaxation	0.11	APHA 23rd Ed, 3111B
15	Nitrate(as NO_3)	mg/l	45	No Relaxation	12.8	IS: 3025 (Part-34)1988RA2019
16	Copper (as Cu)	mg/l	0.01	1.5	<0.05	APHA 23rd Ed, 3111B
17	Boron (as B)	mg/l	0.5	2.4	0.1	APHA 23rd Edi. 4500 B
18	Barium (as Ba)	mg/l	0.7	No Relaxation	<0.1	APHA 23rd Ed
19	Manganese (as Mn)	mg/l	0.1	0.3	<0.05	APHA 23rd Ed, 3111B
20	Phenolic Compounds (as C_6H_5OH)	mg/l	0.001	0.002	<0.001	IS: 3025 (Part-43)1992 RA2019
21	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3114
22	Silver (as Ag)	mg/l	0.1	No Relaxation	<0.02	APHA 23rd Ed, 3111B
23	Sulphide (as H2S)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-29)1986 RA2019
24	Aluminum (as Al)	mg/l	0.03	0.2	<0.05	APHA 23rd Edi. 3500 Al-B
25	Zinc (as Zn)	mg/l	5	15	0.24	APHA 23rd Ed, 3111B
26	Cadmium (as Cd)	mg/l	0.003	No Relaxation	<0.003	APHA 23rd Ed, 3111B
27	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-27)1986 RA2019
28	Lead (as Pb)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
29	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	APHA 23rd Ed, 3112
30	Nickel (as Ni)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
31	Total Arsenic (as As)	mg/l	0.01	0.05	<0.025	APHA 23rd Ed, 3114
32	Total Chromium (as Cr)	mg/l	0.05	No Relaxation	<0.05	APHA 23rd Ed, 3111D
Bacteriological Parameters						
33	Total Coliform	Per100ml	Shall not be detectable		Absent	IS : 15185-2016
34	*E.Coli*	*E.coli/100ml*	Shall not be detectable		Absent	IS : 15185-2016

End of Report

Checked By

For J P Test & Research Centre

S. Microbiologist

Chemical

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied. 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RWJ2025139	Page Number	Page 1 of 2
Job Order Number	JPT/WJ20/25139	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

NAME & ADDRESS OF CUSTOMER	SAMPLE DETAILS
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602	
Issued to, **M/s EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi	Sample Description : One Sample of Water Described as "Ground Water Collected on 23.10.2020" Sampling done by : JPT Lab Representative Location : **Baisnab Chak** Sampling Protocol : IS: 3025 (Part-1) & IS: 1622 Sample packing : Plastic Container + Glass Bottle Quantity : 5 Ltr + 500ml Analysis done on : 26.10.2020 to 01.11.2020

RESULTS

WATER QUALITY ANALYSIS

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
1	pH value	-	6.5-8.5	No Relaxation	7.40	IS: 3025 (Part-11)1983RA2017
2	True Colour	Hazen	5	15	<5	IS: 3025 (Part-04)1983RA2017
3	Turbidity	NTU	1	5	<1	IS: 3025 (Part-10)1984RA2017
4	Conductivity	µmhos/cm	-	-	1130	IS: 3025 (Part-14)2013RA2019
5	Total Dissolved Solids	mg/l	500	2000	692	IS: 3025 (Part-16)1984RA2017
6	Total Suspended solids	mg/l	-	-	<5	IS: 3025 (Part-17)1984RA2017
7	Total Alkalinity as $CaCO_3$	mg/l	200	600	210	IS: 3025 (Part-23)1986RA2019
8	Total Hardness (as $CaCO_3$)	mg/l	200	600	320	IS: 3025 (Part-21)2009RA2019
9	Calcium (as Ca)	mg/l	75	200	75	IS: 3025 (Part-40)1991RA2019
10	Magnesium (as Mg^{2+})	mg/l	30	100	28.4	APHA 23rd Ed, 3500 Mg B
11	Chlorides (as Cl)	mg/l	250	1000	164	IS: 3025 (Part-32)1988RA2019
12	Fluoride (as F)	mg/l	1	1.5	0.6	APHA 23rd Ed, 4500 F (D)
13	Sulphate (as SO_4)	mg/l	200	400	70	IS: 3025 (Part-24)1986RA2019

Continued...

Checked By

For J P Test & Research Centre

S. PANDEY
Quality Manager

Authorized Signatory, Chemical

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RWJ2025139	Page Number	Page 2 of 2
Job Order Number	JPT/WJ20/25139	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
14	Iron (as Fe)	mg/l	0.3	No Relaxation	0.19	APHA 23rd Ed, 3111B
15	Nitrate(as NO_3)	mg/l	45	No Relaxation	17.2	IS: 3025 (Part-34)1988RA2019
16	Copper (as Cu)	mg/l	0.01	1.5	<0.05	APHA 23rd Ed, 3111B
17	Boron (as B)	mg/l	0.5	2.4	0.1	APHA 23rd Edi. 4500 B
18	Barium (as Ba)	mg/l	0.7	No Relaxation	<0.1	APHA 23rd Ed
19	Manganese (as Mn)	mg/l	0.1	0.3	<0.05	APHA 23rd Ed, 3111B
20	Phenolic Compounds (as C_6H_5OH)	mg/l	0.001	0.002	<0.001	IS: 3025 (Part-43)1992 RA2019
21	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3114
22	Silver (as Ag)	mg/l	0.1	No Relaxation	<0.02	APHA 23rd Ed, 3111B
23	Sulphide (as H2S)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-29)1986 RA2019
24	Aluminum (as Al)	mg/l	0.03	0.2	<0.05	APHA 23rd Edi. 3500 Al-B
25	Zinc (as Zn)	mg/l	5	15	0.33	APHA 23rd Ed, 3111B
26	Cadmium (as Cd)	mg/l	0.003	No Relaxation	<0.003	APHA 23rd Ed, 3111B
27	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-27)1986 RA2019
28	Lead (as Pb)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
29	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	APHA 23rd Ed, 3112
30	Nickel (as Ni)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
31	Total Arsenic (as As)	mg/l	0.01	0.05	<0.025	APHA 23rd Ed, 3114
32	Total Chromium (as Cr)	mg/l	0.05	No Relaxation	<0.05	APHA 23rd Ed, 3111D
Bacteriological Parameters						
33	Total Coliform	Per100ml	Shall not be detectable		Absent	IS : 15185-2016
34	*E.Coli*	*E.coli/100ml*	Shall not be detectable		Absent	IS : 15185-2016

End of Report

Checked By

For J P Test & Research Centre

S. Microbiologist

Chemical
Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RWJ2025140	Page Number	Page 1 of 2
Job Order Number	JPT/WJ20/25140	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

NAME & ADDRESS OF CUSTOMER	SAMPLE DETAILS
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602	
Issued to, **M/s EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi	Sample Description : One Sample of Water Described as "Ground Water Collected on 23.10.2020" Sampling done by : JPT Lab Representative Location : **Gandhi Nagar** Sampling Protocol : IS: 3025 (Part-1) & IS: 1622 Sample packing : Plastic Container + Glass Bottle Quantity : 5 Ltr + 500ml Analysis done on : 26.10.2020 to 01.11.2020

RESULTS

WATER QUALITY ANALYSIS

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
1	pH value	-	6.5-8.5	No Relaxation	7.25	IS: 3025 (Part-11)1983RA2017
2	True Colour	Hazen	5	15	<5	IS: 3025 (Part-04)1983RA2017
3	Turbidity	NTU	1	5	<1	IS: 3025 (Part-10)1984RA2017
4	Conductivity	µmhos/cm	-	-	1575	IS: 3025 (Part-14)2013RA2019
5	Total Dissolved Solids	mg/l	500	2000	1012	IS: 3025 (Part-16)1984RA2017
6	Total Suspended solids	mg/l	-	-	<5	IS: 3025 (Part-17)1984RA2017
7	Total Alkalinity as $CaCO_3$	mg/l	200	600	320	IS: 3025 (Part-23)1986RA2019
8	Total Hardness (as $CaCO_3$)	mg/l	200	600	524	IS: 3025 (Part-21)2009RA2019
9	Calcium (as Ca)	mg/l	75	200	118	IS: 3025 (Part-40)1991RA2019
10	Magnesium (as Mg^{2+})	mg/l	30	100	55.7	APHA 23rd Ed, 3500 Mg B
11	Chlorides (as Cl)	mg/l	250	1000	238	IS: 3025 (Part-32)1988RA2019
12	Fluoride (as F)	mg/l	1	1.5	0.9	APHA 23rd Ed, 4500 F (D)
13	Sulphate (as SO_4)	mg/l	200	400	112	IS: 3025 (Part-24)1986RA2019

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J.P. Test & Research Centre Sahibabad

Checked By

For J P Test & Research Centre

S. PANDEY

Authorized Signatory: Chemical

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RWJ2025140	**Page Number**	Page 2 of 2
Job Order Number	JPT/WJ20/25140	**Customer Ref. Number**	-
Date of Issue	02.11.2020	**Sample Received On**	25.10.2020

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
14	Iron (as Fe)	mg/l	0.3	No Relaxation	0.26	APHA 23rd Ed, 3111B
15	Nitrate(as NO_3)	mg/l	45	No Relaxation	22.4	IS: 3025 (Part-34)1988RA2019
16	Copper (as Cu)	mg/l	0.01	1.5	<0.05	APHA 23rd Ed, 3111B
17	Boron (as B)	mg/l	0.5	2.4	0.1	APHA 23rd Edi. 4500 B
18	Barium (as Ba)	mg/l	0.7	No Relaxation	<0.1	APHA 23rd Ed
19	Manganese (as Mn)	mg/l	0.1	0.3	<0.05	APHA 23rd Ed, 3111B
20	Phenolic Compounds (as C_6H_5OH)	mg/l	0.001	0.002	<0.001	IS: 3025 (Part-43)1992 RA2019
21	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3114
22	Silver (as Ag)	mg/l	0.1	No Relaxation	<0.02	APHA 23rd Ed, 3111B
23	Sulphide (as H2S)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-29)1986 RA2019
24	Aluminum (as Al)	mg/l	0.03	0.2	<0.05	APHA 23rd Edi. 3500 Al-B
25	Zinc (as Zn)	mg/l	5	15	0.44	APHA 23rd Ed, 3111B
26	Cadmium (as Cd)	mg/l	0.003	No Relaxation	<0.003	APHA 23rd Ed, 3111B
27	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-27)1986 RA2019
28	Lead (as Pb)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
29	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	APHA 23rd Ed, 3112
30	Nickel (as Ni)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
31	Total Arsenic (as As)	mg/l	0.01	0.05	<0.025	APHA 23rd Ed, 3114
32	Total Chromium (as Cr)	mg/l	0.05	No Relaxation	<0.05	APHA 23rd Ed, 3111D
Bacteriological Parameters						
33	Total Coliform	Per100ml	Shall not be detectable		Absent	IS : 15185-2016
34	*E.Coli*	*E.coli/100ml*	Shall not be detectable		Absent	IS : 15185-2016

End of Report

Checked By

For J P Test & Research Centre

S. Microbiologist

Chemical

Authorized Signatory

* Format No. JPT/7.8F-05 Issue No. 02 Issue Date 20.08.2020 Rev. No. 00

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RWJ2025141	**Page Number**	Page 1 of 2
Job Order Number	JPT/WJ20/25141	**Customer Ref. Number**	-
Date of Issue	02.11.2020	**Sample Received On**	25.10.2020

NAME & ADDRESS OF CUSTOMER	SAMPLE DETAILS
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO - PS- Durgachak, West Bengal- 721602	
Issued to, **M/s EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi	Sample Description : One Sample of Water Described as "Ground Water Collected on 23.10.2020" Sampling done by : JPT Lab Representative Location : **Aliehak** Sampling Protocol : IS: 3025 (Part-1) & IS: 1622 Sample packing : Plastic Container + Glass Bottle Quantity : 5 Ltr + 500ml Analysis done on : 26.10.2020 to 01.11.2020

RESULTS

WATER QUALITY ANALYSIS

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
1	pH value	-	6.5-8.5	No Relaxation	7.37	IS: 3025 (Part-11)1983RA2017
2	True Colour	Hazen	5	15	<5	IS: 3025 (Part-04)1983RA2017
3	Turbidity	NTU	1	5	<1	IS: 3025 (Part-10)1984RA2017
4	Conductivity	µmhos/cm	-	-	1248	IS: 3025 (Part-14)2013RA2019
5	Total Dissolved Solids	mg/l	500	2000	746	IS: 3025 (Part-16)1984RA2017
6	Total Suspended solids	mg/l	-	-	<5	IS: 3025 (Part-17)1984RA2017
7	Total Alkalinity as $CaCO_3$	mg/l	200	600	324	IS: 3025 (Part-23)1986RA2019
8	Total Hardness (as $CaCO_3$)	mg/l	200	600	296	IS: 3025 (Part-21)2009RA2019
9	Calcium (as Ca)	mg/l	75	200	72	IS: 3025 (Part-40)1991RA2019
10	Magnesium (as Mg^{2+})	mg/l	30	100	28.2	APHA 23rd Ed, 3500 Mg B
11	Chlorides (as Cl)	mg/l	250	1000	148	IS: 3025 (Part-32)1988RA2019
12	Fluoride (as F)	mg/l	1	1.5	0.7	APHA 23rd Ed, 4500 F (D)
13	Sulphate (as SO_4)	mg/l	200	400	76	IS: 3025 (Part-24)1986RA2019

Continued...

For J P Test & Research Centre

Checked By

Authorized Signatory: Chemical

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TEST REPORT

Test Report Number	RWJ2025141	Page Number	Page 2 of 2
Job Order Number	JPT/WJ20/25141	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

S.No	Parameters	Unit	Max Requirement as per (IS-10500-2012) Limit		Results	Test Method
			Desirable	Permissible		
14	Iron (as Fe)	mg/l	0.3	No Relaxation	0.22	APHA 23rd Ed, 3111B
15	Nitrate(as NO_3)	mg/l	45	No Relaxation	19.6	IS: 3025 (Part-34)1988RA2019
16	Copper (as Cu)	mg/l	0.01	1.5	<0.05	APHA 23rd Ed, 3111B
17	Boron (as B)	mg/l	0.5	2.4	0.1	APHA 23rd Edi. 4500 B
18	Barium (as Ba)	mg/l	0.7	No Relaxation	<0.1	APHA 23rd Ed
19	Manganese (as Mn)	mg/l	0.1	0.3	<0.05	APHA 23rd Ed, 3111B
20	Phenolic Compounds (as C_6H_5OH)	mg/l	0.001	0.002	<0.001	IS: 3025 (Part-43)1992 RA2019
21	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3114
22	Silver (as Ag)	mg/l	0.1	No Relaxation	<0.02	APHA 23rd Ed, 3111B
23	Sulphide (as H2S)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-29)1986 RA2019
24	Aluminum (as Al)	mg/l	0.03	0.2	<0.05	APHA 23rd Edi. 3500 Al-B
25	Zinc (as Zn)	mg/l	5	15	0.39	APHA 23rd Ed, 3111B
26	Cadmium (as Cd)	mg/l	0.003	No Relaxation	<0.003	APHA 23rd Ed, 3111B
27	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.05	IS: 3025 (Part-27)1986 RA2019
28	Lead (as Pb)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
29	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	APHA 23rd Ed, 3112
30	Nickel (as Ni)	mg/l	0.01	No Relaxation	<0.01	APHA 23rd Ed, 3111B
31	Total Arsenic (as As)	mg/l	0.01	0.05	<0.025	APHA 23rd Ed, 3114
32	Total Chromium (as Cr)	mg/l	0.05	No Relaxation	<0.05	APHA 23rd Ed, 3111D
Bacteriological Parameters						
33	Total Coliform	Per100ml	Shall not be detectable		Absent	IS : 15185-2016
34	*E.Coli*	*E.coli/100ml*	Shall not be detectable		Absent	IS : 15185-2016

End of Report

For J P Test & Research Centre

Checked By | S. Microbiologist | Chemical | Authorized Signatory

* Format No. JPT/7.8F-05 Issue No. 02 Issue Date 20.08.2020 Rev. No. 00

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TEST REPORT

Test Report Number	RWJ2025142-25143	**Page Number**	Page 1 of 2
Job Order Number	JPT/WJ20/25142-25143	**Customer Ref. Number**	-
Date of Issue	02.11.2020	**Sample Received On**	25.10.2020

NAME & ADDRESS OF CUSTOMER	SAMPLE DETAILS
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602	
Issued to, **M/s EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi	Sample Description : One Sample of Water Described as "Surface Water Collected on 23.10.2020" Sampling done by : JPT Lab Representative Location : **Pond near project Site & Pond near Durgachak** Sampling Protocol : IS: 3025 (Part-1) & IS: 1622 Sample packing : Plastic Container + Glass Bottle Quantity : 4 Ltr + 500ml Analysis done on : 26.10.2020 to 01.11.2020

RESULTS

WATER QUALITY ANALYSIS

S.No	Parameters	Unit	Results		Test Method
			Pond near project Site (25142)	Pond near Durgachak (25143)	
1	pH value	-	6.72	* 6.98	IS: 3025 (Part-11)1983RA2017
2	Turbidity	NTU	16	18	IS: 3025 (Part-10)1984RA2017
3	Conductivity	µmhos/cm	2042	1902	IS: 3025 (Part-14)2013RA2019
4	Total Dissolved Solids	mg/l	1264	1196	IS: 3025 (Part-16)1984RA2017
5	Total Alkalinity as $CaCO_3$	mg/l	278	* 242	IS: 3025 (Part-23)1986RA2019
6	Total Hardness (as $CaCO_3$)	mg/l	410	390	IS: 3025 (Part-21)2009RA2019
7	Calcium (as Ca)	mg/l	102	97	IS: 3025 (Part-40)1991RA2019
8	Magnesium (as Mg^{2+})	mg/l	37.7	35.6	APHA 23rd Ed, 3500 Mg B
9	Chlorides (as Cl)	mg/l	442	426	IS: 3025 (Part-32)1988RA2019
10	Sulphate (as SO_4)	mg/l	58	52	IS: 3025 (Part-24)1986RA2019
11	Nitrate(as NO_3)	mg/l	15.8	14.6	IS: 3025 (Part-34)1988RA2019
12	Fluoride (as F-)	mg/l	0.5	0.5	APHA 23rd Ed, 4500 F (D)

Continued...

Checked By

For J P Test & Research Centre

S. PANDEY
Quality Manager

Authorized Signatory: Chemical

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2.The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RWJ2025142-25143	Page Number	Page 2 of 2
Job Order Number	JPT/WJ20/25142-25143	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

S.No	Parameters	Unit	Results		Test Method
			Pond near project Site (25142)	Pond near Durgachak (25143)	
13	Sodium (as Na)	mg/l	242	214	IS: 3025 (Part-45)1993RA2019
14	Potassium (as K)	mg/l	18	52	IS: 3025 (Part-45)1993RA2019
15	Phosphate (as PO_4)	mg/l	1.8	1.5	IS: 3025 (Part-31)1988RA2019
16	Boron (as B)	mg/l	0.15	0.14	APHA 23rd Edi. 4500 B
17	Zinc (as Zn)	mg/l	0.32	0.31	APHA 23rd Ed, 3111B
18	Manganese (as Mn)	mg/l	0.06	0.05	APHA 23rd Ed, 3111B
19	Lead (as Pb)	mg/l	<0.1	<0.1	APHA 23rd Ed, 3111B
20	Iron (as Fe)	mg/l	0.17	0.19	APHA 23rd Ed, 3111B
21	Cadmium (as Cd)	mg/l	<0.01	<0.01	APHA 23rd Ed, 3111B
22	Total Chromium (as Cr)	mg/l	<0.01	<0.01	APHA 23rd Ed, 3111D
23	Nickel (as Ni)	mg/l	<0.05	<0.05	APHA 23rd Ed, 3111B
24	Dissolved Oxygen	mg/l	5.3	4.9	IS: 3025 (Part-38)1989RA2019
25	Biological Oxygen Demand (27°C 3 days)	mg/l	6	8	IS: 3025 (Part-44)1993RA2019
26	Chemical Oxygen Demand	mg/l	36	52	IS: 3025 (Part-58)2006RA2017
Bacteriological Parameters					
27	Total Coliform	MPN/100ml	3.2×10^4	2.7×10^4	IS: 1622, 1981RA2019

End of Report

Checked By

For J P Test & Research Centre

S. Microbiologist

Chemical

Authorized Signatory

* Format No. JPT/7.8F-05 Issue No. 02 Issue Date 20.08.2020 Rev. No. 00

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TEST REPORT

Test Report Number	RWJ2025144-25145	Page Number	Page 1 of 2
Job Order Number	JPT/WJ20/25144-25145	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

NAME & ADDRESS OF CUSTOMER	SAMPLE DETAILS
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO – PS- Durgachak, West Bengal- 721602	
Issued to, **M/s EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi	Sample Description : One Sample of Water Described as "Surface Water Collected on 23.10.2020" Sampling done by : JPT Lab Representative Location : **Hoogly River Downstream & Hoogly River Upstream** Sampling Protocol : IS: 3025 (Part-1) & IS: 1622 Sample packing : Plastic Container + Glass Bottle Quantity : 4 Ltr + 500ml Analysis done on : 26.10.2020 to 01.11.2020

RESULTS
WATER QUALITY ANALYSIS

S.No	Parameters	Unit	Results: Hoogly River Downstream (25144)	Results: Hoogly River Upstream (25145)	Test Method
1	pH value	-	7.58	8.1	IS: 3025 (Part-11)1983RA2017
2	Turbidity	NTU	12	10	IS: 3025 (Part-10)1984RA2017
3	Conductivity	µmhos/cm	5588	4446	IS: 3025 (Part-14)2013RA2019
4	Total Dissolved Solids	mg/l	3464	2756	IS: 3025 (Part-16)1984RA2017
5	Total Alkalinity as $CaCO_3$	mg/l	164	152	IS: 3025 (Part-23)1986RA2019
6	Total Hardness (as $CaCO_3$)	mg/l	536	524	IS: 3025 (Part-21)2009RA2019
7	Calcium (as Ca)	mg/l	144	142	IS: 3025 (Part-40)1991RA2019
8	Magnesium (as Mg^{2+})	mg/l	42.9	41.6	APHA 23rd Ed, 3500 Mg B
9	Chlorides (as Cl)	mg/l	1372	1358	IS: 3025 (Part-32)1988RA2019
10	Sulphate (as SO_4)	mg/l	102	96	IS: 3025 (Part-24)1986RA2019
11	Nitrate(as NO_3)	mg/l	24.8	22.4	IS: 3025 (Part-34)1988RA2019
12	Fluoride (as F)	mg/l	0.6	0.5	APHA 23rd Ed, 4500 F (D)

Continued...

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For J P Test & Research Centre

S. PANDEY
Quality Manager

Authorized Signatory: Chemical

Format No. JPT/QF/7.8/F-05, Issue No. 02 Issue Date 20.08.2020 Rev. No. 00

TEST REPORT

Test Report Number	RWJ2025144-25145	**Page Number**	Page 2 of 2
Job Order Number	JPT/WJ20/25144-25145	**Customer Ref. Number**	-
Date of Issue	02.11.2020	**Sample Received On**	25.10.2020

S.No	Parameters	Unit	Results		Test Method
			Hoogly River Downstream (25144)	Hoogly River Upstream (25145)	
13	Sodium (as Na)	mg/l	710	698	IS: 3025 (Part-45)1993RA2019
14	Potassium (as K)	mg/l	62	58	IS: 3025 (Part-45)1993RA2019
15	Phosphate (as PO_4)	mg/l	3.2	2.6	IS: 3025 (Part-31)1988RA2019
16	Boron (as B)	mg/l	0.18	0.15	APHA 23rd Edi. 4500 B
17	Zinc (as Zn)	mg/l	0.42	0.38	APHA 23rd Ed, 3111B
18	Manganese (as Mn)	mg/l	0.07	0.08	APHA 23rd Ed, 3111B
19	Lead (as Pb)	mg/l	<0.1	<0.1	APHA 23rd Ed, 3111B
20	Iron (as Fe)	mg/l	0.22	0.18	APHA 23rd Ed, 3111B
21	Cadmium (as Cd)	mg/l	<0.01	<0.01	APHA 23rd Ed, 3111B
22	Total Chromium (as Cr)	mg/l	<0.01	<0.01	APHA 23rd Ed, 3111D
23	Nickel (as Ni)	mg/l	<0.05	<0.05	APHA 23rd Ed, 3111B
24	Dissolved Oxygen	mg/l	6.8	7.1	IS: 3025 (Part-38)1989RA2019
25	Biological Oxygen Demand (27°C 3 days)	mg/l	<2	2.2	IS: 3025 (Part-44)1993RA2019
26	Chemical Oxygen Demand	mg/l	12	14	IS: 3025 (Part-58)2006RA2017
Bacteriological Parameters					
27	Total Coliform	MPN/100ml	1.2×10^3	1.1×10^3	IS: 1622, 1981RA2019

End of Report

Checked By

For J P Test & Research Centre

S. Microbiologist

Chemical

Authorized Signatory

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TEST REPORT

Test Report Number	RWJ2025146-25147	Page Number	Page 1 of 2
Job Order Number	JPT/WJ20/25146-25147	Customer Ref. Number	-
Date of Issue	02.11.2020	Sample Received On	25.10.2020

NAME & ADDRESS OF CUSTOMER	SAMPLE DETAILS
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602	
Issued to, M/s EQMS India Pvt. Ltd., 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi	Sample Description : Two Sample of Water Described as "Surface Water Collected on 23.10.2020" Sampling done by : JPT Lab Representative Location : **Haldi River Downstream & Haldi River Upstream** Sampling Protocol : IS: 3025 (Part-1) & IS: 1622 Sample packing : Plastic Container + Glass Bottle Quantity : 4 Ltr + 500ml Analysis done on : 26.10.2020 to 01.11.2020

RESULTS

WATER QUALITY ANALYSIS

S.No	Parameters	Unit	Results		Test Method
			Haldi River Downstream (25146)	Haldi River Upstream (25147)	
1	pH value	-	7.81	7.75	IS: 3025 (Part-11)1983RA2017
2	Turbidity	NTU	15	12	IS: 3025 (Part-10)1984RA2017
3	Conductivity	µmhos/cm	5476	5392	IS: 3025 (Part-14)2013RA2019
4	Total Dissolved Solids	mg/l	3410	3342	IS: 3025 (Part-16)1984RA2017
5	Total Alkalinity as $CaCO_3$	mg/l	312	256	IS: 3025 (Part-23)1986RA2019
6	Total Hardness (as $CaCO_3$)	mg/l	524	468	IS: 3025 (Part-21)2009RA2019
7	Calcium (as Ca)	mg/l	132	122	IS: 3025 (Part-40)1991RA2019
8	Magnesium (as Mg^{2+})	mg/l	47.3	39.6	APHA 23rd Ed, 3500 Mg B
9	Chlorides (as Cl)	mg/l	1644	1698	IS: 3025 (Part-32)1988RA2019
10	Sulphate (as SO_4)	mg/l	88	92	IS: 3025 (Part-24)1986RA2019
11	Nitrate(as NO_3)	mg/l	15.4	12.6	IS: 3025 (Part-34)1988RA2019
12	Fluoride (as F)	mg/l	0.5	0.4	APHA 23rd Ed, 4500 F (D)

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Checked By

For J P Test & Research Centre

S. PANDEY
Quality Manager

Authorized Signatory: Chemical

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RWJ2025146-25147	**Page Number**	Page 2 of 2
Job Order Number	JPT/WJ20/25146-25147	**Customer Ref. Number**	-
Date of Issue	02.11.2020	**Sample Received On**	25.10.2020

S.No	Parameters	Unit	Results		Test Method
			Haldi River Downstream (25146)	Haldi River Upstream (25147)	
13	Sodium (as Na)	mg/l	1462	1428	IS: 3025 (Part-45)1993RA2019
14	Potassium (as K)	mg/l	54	46	IS: 3025 (Part-45)1993RA2019
15	Phosphate (as PO_4)	mg/l	1.8	1.4	IS: 3025 (Part-31)1988RA2019
16	Boron (as B)	mg/l	0.15	0.12	APHA 23rd Edi. 4500 B
17	Zinc (as Zn)	mg/l	0.32	0.26	APHA 23rd Ed, 3111B
18	Manganese (as Mn)	mg/l	0.08	0.06	APHA 23rd Ed, 3111B
19	Lead (as Pb)	mg/l	<0.1	<0.1	APHA 23rd Ed, 3111B
20	Iron (as Fe)	mg/l	0.18	0.16	APHA 23rd Ed, 3111B
21	Cadmium (as Cd)	mg/l	<0.01	<0.01	APHA 23rd Ed, 3111B
22	Total Chromium (as Cr)	mg/l	<0.01	<0.01	APHA 23rd Ed, 3111D
23	Nickel (as Ni)	mg/l	<0.05	<0.05	APHA 23rd Ed, 3111B
24	Dissolved Oxygen	mg/l	6.9	6.8	IS: 3025 (Part-38)1989RA2019
25	Biological Oxygen Demand (27°C 3 days)	mg/l	2.8	3.1	IS: 3025 (Part-44)1993RA2019
26	Chemical Oxygen Demand	mg/l	12	16	IS: 3025 (Part-58)2006RA2017
Bacteriological Parameters					
27	Total Coliform	MPN/100ml	1.6×10^3	1.8×10^3	IS: 1622, 1981RA2019

End of Report

Checked By

For J P Test & Research Centre

S. Microbiologist

Chemical

Authorized Signatory

* Format No. JPT/7.8F-05 Issue No. 02 Issue Date 20.08.2020 Rev. No. 00

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TEST REPORT

Test Report Number	RSJ2025148-25149	Page Number	Page 1 of 2
Job Order Number	JPT/SJ20/25148-25149	Customer Ref. Number	-
Date of Issue	04.11.2020	Sample Received On	25.10.2020
NAME & ADDRESS OF CUSTOMER		SAMPLE DETAILS	

Name of Project: **M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.)**
Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602

Issued to,
M/s EQMS India Pvt. Ltd.,
304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers,
Community Centre, Karkardooma, Delhi

Sample Description : Soil
Sampling Location : **Project Site & Durgachak Village**
Date of Sampling : 23.10.2020
Sampling Done by : JPT Lab Representative
Sample Quantity : 500g
Analysis Done on : 26.10.2020 to 03.11.2020

TEST RESULTS

SOIL ANALYSIS

S. No.	PARAMETERS	UNIT	RESULTS		TEST METHOD
			Project Site (25148)	Durgachak (25149)	
1	Texture	-	Sandy Clay Loam	Clay Loam	Soil Chemical Analysis by M.L. Jackson
2	Particle Size Distribution:	%			Soil Chemical Analysis by M.L. Jackson
i)	Sand , >0.2-mm Dia	%	50	44	
ii)	Silt , 0.02 to 0.2-mm Dia	%	21	25	
iii)	Clay ,< 0.002-mm Dia	%	29	31	
3	pH (1:2.5)	-	7.56	7.62	IS: 2720 (Part-26)
4	Electrical Conductivity (1:2)	µmhos/cm	216	210	IS: 14767 : 2000
5	Cation Exchange Capacity	meq/100 gm	6.8	7.8	IS: 2720 (Part-24)
6	Exchangeable Sodium	meq/100 gm	1.23	1.35	JPT/CH/SOP/SIL-08
7	Exchangeable Calcium	meq/100 gm	3.56	4.21	JPT/CH/SOP/SIL-05
8	Exchangeable Magnesium	meq/100 gm	1.60	1.78	JPT/CH/SOP/SIL-06
9	Sodium Absorption Ratio	-	2.5	2.46	By Calculation
10	Water Holding Capacity	%	28.5	29.8	Soil Chemical Analysis by M.L. Jackson
11	Porosity	%	44.6	47.5	Soil Chemical Analysis by M.L.Jackson
12	Organic Carbon	%	0.65	0.61	IS: 2720 (Part 22)
13	Organic Matter	%	1.12	1.05	IS: 2720 (Part 22)
14	Bulk Density	gm/cc	1.42	1.39	Soil Chemical Analysis by M.L.Jackson
15	Iron (DTPA extractable)	mg/kg	17.2	12.4	JPT/CH/SOP/SIL-19
16	Zinc as Zn	mg/kg	21.6	18.2	JPT/CH/SOP/SIL-19
17	Copper as Cu	mg/kg	0.9	1.4	JPT/CH/SOP/SIL-19
18	Manganese as Mn	mg/kg	3.7	4.2	JPT/CH/SOP/SIL-19

Continued...

Test & Research Centre Sahibabad

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For J P Test & Research Centre

S. PANDEY

Authorized Signatory

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TEST REPORT

Test Report Number	RSJ2025148-25149	**Page Number**	Page 2 of 2
Job Order Number	JPT/SJ20/25148-25149	**Customer Ref. Number**	-
Date of Issue	04.11.2020	**Sample Received On**	25.10.2020

TEST RESULTS

SOIL ANALYSIS

S. No.	PARAMETERS	UNIT	RESULTS		TEST METHOD
			Project Site (25148)	Durgachak (25149)	
19	Chloride as Cl	mg/kg	32.4	29.8	Soil Chemical Analysis by M.L.Jackson
20	Fluoride as F	mg/kg	0.8	1.1	Soil Chemical Analysis by M.L.Jackson
	Available Nutrients				
21	Nitrogen as N	kg/ha	274	312	Soil Chemical Analysis by M.L.Jackson
22	Phosphorus(Olsen's) as P	kg/ha	17.2	19.4	JPT/CH/SOP/SOIL/09
23	Potassium as K	kg/ha	176	202	Soil Chemical Analysis by M.L.Jackson

End of Report

Checked By

For J P Test & Research Centre

S. PANDEY
Quality Manager

Authorized Signatory

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TEST REPORT

Test Report Number	RSJ2025150-25151	**Page Number**	Page 1 of 2
Job Order Number	JPT/SJ20/25150-25151	**Customer Ref. Number**	-
Date of Issue	04.11.2020	**Sample Received On**	25.10.2020
NAME & ADDRESS OF CUSTOMER		**SAMPLE DETAILS**	

Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.)
Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602

Issued to,
M/s EQMS India Pvt. Ltd.,
304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers,
Community Centre, Karkardooma, Delhi

Sample Description	: Soil
Sampling Location	: **Khanjanchak & Basudevpur**
Date of Sampling	: 23.10.2020
Sampling Done by	: JPT Lab Representative
Sample Quantity	: 500g
Analysis Done on	: 26.10.2020 to 03.11.2020

TEST RESULTS

SOIL ANALYSIS

S. No.	PARAMETERS	UNIT	RESULTS		TEST METHOD
			Khanjanchak (25150)	Basudevpur (25151)	
1	Texture	-	Clay Loam	Clay Loam	Soil Chemical Analysis by M.L. Jackson
2	Particle Size Distribution:				Soil Chemical Analysis by M.L. Jackson
i)	Sand , >0.2-mm Dia	%	38	32	
ii)	Silt , 0.02 to 0.2-mm Dia	%	34	40	
iii)	Clay ,< 0.002-mm Dia	%	28	28	
3	pH (1:2.5)	-	7.70	7.55	IS: 2720 (Part-26)
4	Electrical Conductivity (1:2)	µmhos/cm	205	224	IS: 14767 : 2000
5	Cation Exchange Capacity	meq/100 gm	6.1	6.9	IS: 2720 (Part-24)
6	Exchangeable Sodium	meq/100 gm	2.56	1.36	JPT/CH/SOP/SIL-08
7	Exchangeable Calcium	meq/100 gm	2.96	3.18	JPT/CH/SOP/SIL-05
8	Exchangeable Magnesium	meq/100 gm	1.42	1.95	JPT/CH/SOP/SIL-06
9	Sodium Absorption Ratio	-	2.24	2.69	By Calculation
10	Water Holding Capacity	%	31.2	30.6	Soil Chemical Analysis by M.L. Jackson
11	Porosity	%	50.8	54.6	Soil Chemical Analysis by M.L.Jackson
12	Organic Carbon	%	0.74	0.64	IS: 2720 (Part 22)
13	Organic Matter	%	1.27	1.10	IS: 2720 (Part 22)
14	Bulk Density	gm/cc	1.29	1.28	Soil Chemical Analysis by M.L.Jackson
15	Iron (DTPA extractable)	mg/kg	18.3	11.5	JPT/CH/SOP/SIL-19
16	Zinc as Zn	mg/kg	23.6	19.5	JPT/CH/SOP/SIL-19
17	Copper as Cu	mg/kg	2.1	1.5	JPT/CH/SOP/SIL-19
18	Manganese as Mn	mg/kg	2.8	5.1	JPT/CH/SOP/SIL-19

Continued...

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For J P Test & Research Centre
S. PANDEY
Quality Manager
Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

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TEST REPORT

Test Report Number	RSJ2025150-25151	Page Number	Page 2 of 2
Job Order Number	JPT/SJ20/25150-25151	Customer Ref. Number	-
Date of Issue	04.11.2020	Sample Received On	25.10.2020

TEST RESULTS

SOIL ANALYSIS

S. No.	PARAMETERS	UNIT	RESULTS		TEST METHOD
			Khanjanchak (25150)	Basudevpur (25151)	
19	Chloride as Cl	mg/kg	36.2	34.6	Soil Chemical Analysis by M.L.Jackson
20	Fluoride as F	mg/kg	0.5	0.7	Soil Chemical Analysis by M.L.Jackson
	Available Nutrients				
21	Nitrogen as N	kg/ha	294	265	Soil Chemical Analysis by M.L.Jackson
22	Phosphorus(Olsen's) as P	kg/ha	18.5	20.2	JPT/CH/SOP/SOIL/09
23	Potassium as K	kg/ha	187	118	Soil Chemical Analysis by M.L.Jackson

End of Report

J.P. Test & Research Centre Sahibabad

Checked By

For J P Test & Research Centre

S. PANDEY

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

TEST REPORT

Test Report Number	RSJ2025152-25153	Page Number	Page 1 of 2
Job Order Number	JPT/SJ20/25152-25153	Customer Ref. Number	-
Date of Issue	04.11.2020	Sample Received On	25.10.2020
NAME & ADDRESS OF CUSTOMER		SAMPLE DETAILS	
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602			
Issued to, M/s EQMS India Pvt. Ltd., 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi		Sample Description : Soil Sampling Location : Madhabpur & Baneshwar Chak Date of Sampling : 23.10.2020 Sampling Done by : JPT Lab Representative Sample Quantity : 500g each Analysis Done on : 26.10.2020 to 03.11.2020	

TEST RESULTS

SOIL ANALYSIS

S. No.	PARAMETERS	UNIT	RESULTS		TEST METHOD
			Madhabpur (25152)	Baneshwar Chak (25153)	
1	Texture	-	Clay Loam	Clay Loam	Soil Chemical Analysis by M.L. Jackson
2	Particle Size Distribution:				Soil Chemical Analysis by M.L. Jackson
i)	Sand , >0.2-mm Dia	%	34	41	
ii)	Silt , 0.02 to 0.2-mm Dia	%	36	27	
iii)	Clay , < 0.002-mm Dia	%	30	32	
3	pH (1:2.5)	-	7.42	7.48	IS: 2720 (Part-26)
4	Electrical Conductivity (1:2)	µmhos/cm	218	212	IS: 14767 : 2000
5	Cation Exchange Capacity	meq/100 gm	8.8	9.3	IS: 2720 (Part-24)
6	Exchangeable Sodium	meq/100 gm	1.92	1.62	JPT/CH/SOP/SIL-08
7	Exchangeable Calcium	meq/100 gm	4.14	5.19	JPT/CH/SOP/SIL-05
8	Exchangeable Magnesium	meq/100 gm	2.26	2.10	JPT/CH/SOP/SIL-06
9	Sodium Absorption Ratio	-	3.39	2.53	By Calculation
10	Water Holding Capacity	%	30.2	28.6	Soil Chemical Analysis by M.L. Jackson
11	Porosity	%	51.6	49.6	Soil Chemical Analysis by M.L.Jackson
12	Organic Carbon	%	0.71	0.76	IS: 2720 (Part 22)
13	Organic Matter	%	1.22	1.31	IS: 2720 (Part 22)
14	Bulk Density	gm/cc	1.33	1.38	Soil Chemical Analysis by M.L.Jackson
15	Iron (DTPA extractable)	mg/kg	15.2	9.8	JPT/CH/SOP/SIL-19
16	Zinc as Zn	mg/kg	24.4	22.2	JPT/CH/SOP/SIL-19
17	Copper as Cu	mg/kg	1.8	1.1	JPT/CH/SOP/SIL-19
18	Manganese as Mn	mg/kg	3.5	4.1	JPT/CH/SOP/SIL-19

Continued..

Checked By

For J P Test & Research Centre

S. PANDEY

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2.The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

TEST REPORT

Test Report Number	RSJ2025152-25153	Page Number	Page 2 of 2
Job Order Number	JPT/SJ20/25152-25153	Customer Ref. Number	-
Date of Issue	04.11.2020	Sample Received On	25.10.2020

TEST RESULTS

SOIL ANALYSIS

S. No.	PARAMETERS	UNIT	RESULTS		TEST METHOD
			Madhabpur (25152)	Baneshwar Chak (25153)	
19	Chloride as Cl	mg/kg	31.5	31.6	Soil Chemical Analysis by M.L.Jackson
20	Fluoride as F	mg/kg	1.4	1.2	Soil Chemical Analysis by M.L.Jackson
	Available Nutrients				
21	Nitrogen as N	kg/ha	288	276	Soil Chemical Analysis by M.L.Jackson
22	Phosphorus(Olsen's) as P	kg/ha	16.7	18.4	JPT/CH/SOP/SOIL/09
23	Potassium as K	kg/ha	158	195	Soil Chemical Analysis by M.L.Jackson

End of Report

J.P. Test & Research Centre Sahibabad

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For J P Test & Research Centre

SUPANDEY

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Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

TEST REPORT

Test Report Number	RSJ2025154-25155	Page Number	Page 1 of 2
Job Order Number	JPT/SJ20/25154-25155	Customer Ref. Number	-
Date of Issue	04.11.2020	Sample Received On	25.10.2020

NAME & ADDRESS OF CUSTOMER	SAMPLE DETAILS
Name of Project: M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.) Expansion of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602	
Issued to, **M/s EQMS India Pvt. Ltd.,** 304 & 305, 3rd Floor, Plot No. 16, Rishabh Towers, Community Centre, Karkardooma, Delhi	Sample Description : Soil Sampling Location : **Baishnabchak & Jamal Chak** Date of Sampling : 23.10.2020 Sampling Done by : JPT Lab Representative Sample Quantity : 500g each Analysis Done on : 26.10.2020 to 03.11.2020

TEST RESULTS

SOIL ANALYSIS

S. No.	PARAMETERS	UNIT	RESULTS		TEST METHOD
			Baishnabchak (25154)	Jamal Chak (25155)	
1	Texture	-	Clay Loam	Clay Loam	Soil Chemical Analysis by M.L. Jackson
2	Particle Size Distribution:				Soil Chemical Analysis by M.L. Jackson
i)	Sand , >0.2-mm Dia	%	42	34	
ii)	Silt , 0.02 to 0.2-mm Dia	%	30	39	
iii)	Clay ,< 0.002-mm Dia	%	28	17	
3	pH (1:2.5)	-	7.59	7.64	IS: 2720 (Part-26)
4	Electrical Conductivity (1:2)	µmhos/cm	208	220	IS: 14767 : 2000
5	Cation Exchange Capacity	meq/100 gm	7.5	7.2	IS: 2720 (Part-24)
6	Exchangeable Sodium	meq/100 gm	1.29	1.31	JPT/CH/SOP/SIL-08
7	Exchangeable Calcium	meq/100 gm	4.14	3.98	JPT/CH/SOP/SIL-05
8	Exchangeable Magnesium	meq/100 gm	1.68	1.52	JPT/CH/SOP/SIL-06
9	Sodium Absorption Ratio	-	2.38	2.49	By Calculation
10	Water Holding Capacity	%	31.2	28.9	Soil Chemical Analysis by M.L. Jackson
11	Porosity	%	52.6	46.2	Soil Chemical Analysis by M.L.Jackson
12	Organic Carbon	%	0.82	0.84	IS: 2720 (Part 22)
13	Organic Matter	%	1.41	1.44	IS: 2720 (Part 22)
14	Bulk Density	gm/cc	1.31	1.46	Soil Chemical Analysis by M.L.Jackson
15	Iron (DTPA extractable)	mg/kg	17.5	13.6	JPT/CH/SOP/SIL-19
16	Zinc as Zn	mg/kg	25.1	20.4	JPT/CH/SOP/SIL-19
17	Copper as Cu	mg/kg	0.8	1.3	JPT/CH/SOP/SIL-19
18	Manganese as Mn	mg/kg	2.2	5.3	JPT/CH/SOP/SIL-19

Continued...

Test & Research Centre Sahibabad

Checked By

For J P Test & Research Centre

S. PANDEY

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2. The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

TEST REPORT

Test Report Number	RSJ2025154-25155	Page Number	Page 2 of 2
Job Order Number	JPT/SJ20/25154-25155	Customer Ref. Number	-
Date of Issue	04.11.2020	Sample Received On	25.10.2020

TEST RESULTS

SOIL ANALYSIS

S. No.	PARAMETERS	UNIT	RESULTS		TEST METHOD
			Baishnabchak (25154)	Jamal Chak (25155)	
19	Chloride as Cl	mg/kg	34.2	32.4	Soil Chemical Analysis by M.L.Jackson
20	Fluoride as F	mg/kg	0.4	0.7	Soil Chemical Analysis by M.L.Jackson
	Available Nutrients				
21	Nitrogen as N	kg/ha	315	275	Soil Chemical Analysis by M.L.Jackson
22	Phosphorus(Olsen's) as P	kg/ha	15.7	16.9	JPT/CH/SOP/SOIL/09
23	Potassium as K	kg/ha	169	135	Soil Chemical Analysis by M.L.Jackson

End of Report

J.P. Test & Research Centre Sahibabad

Checked By

For J P Test & Research Centre

S PANDEY

Authorized Signatory

Note 1. Sample will be retained for 15 days for chemical testing and 7 days for Bacteriological testing from the date of issue of test report, unless specified by the customer. The results given for noise/lux are related to the observed values at the time of monitoring. The customer asked for the above tests only. 2.The parameters marked as * are not accredited by NABL. 3. The results given above are related to the tested sample and mentioned parameters. Endorsement of product is neither inferred not implied . 4. Total liability of our works is limited to invoiced amount. 5. This report can not be used as evidence in a court of law without the written approval of the lab. 6. Certificate shall not be reproduced, except in full, without prior written approval of the laboratory

ENCLOSURE XXI: WILDLIFE CONSERVATION PLAN

Trackon
Couriers Pvt. Limited
35/1, JHOWATALA ROAD, PARK CIRCUS, KOLKATA-700016
Corp. Office : A-64, Naraina Industrial Area, Phase I, New Delhi - 110028
CIN : U63030DL2002PTC113971

3102584187

KOLKATA SELF

CONSIGNOR
Indrani (I) Pvt Ltd
14 Arun Mondal (TS)

CONSIGNEE
The Chief Wildlife Warden
Bikash Bhawan
Salt Lake, Kol-91

ORIGIN: HLD
DESTINATION: Kol

DOX / N.DOX
PCS.
AIR / SURFACE
COURIER CHARGES
RISK SURCHARGE
GST
TOTAL
CASH
CREDIT

RECEIVER'S COPY
Received by TCPL
DATE
Sender's Signature

I warrant that all details given herein are true and correct. I accept the terms of carriage.

Received Packet/Parcels in order & good Condition
Name
Please affix your stamp
Signature
Date
Time

FOR YOUR PERSONAL AND VALUABLE ITEMS, USE OUR EXPRESS SERVICE - PRIME TRACK.

INDORAMA

Indorama India Private Limited
(Formerly IRC Agrochemicals Private Limited)

Dated: 19.03.2022

To
The Chief Wildlife Warden, West Bengal,
Bikash Bhaban (North Block),
3rd Floor, Salt Lake City, Kolkata-700091

Subject: Approval of the Wildlife Conservation Plan for Schedule-I, fauna falling in the Buffer zone (10 Km radius) of Fertilizer Plant at Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602 by M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.)

Dear Sir,

This is in reference to above-said project located Durgachak, Haldia, Purba Medinipur, PO + PS- Durgachak, West Bengal- 721602 & is under progress of application submission to MoEF&CC for the grant of Environmental Clearance.

As per procedure laid down in the EIA Notification,2006 it is mandatory to study Ecological Biodiversity of 10 km radius of Project Site while preparing the EIA Report. As per the Secondary data of the area, Ganges River dolphin (*Platanista gangetica gangetica*) are the main Schedule-I, Fauna in the study area.

As per TOR point no. 5(v), it is mandatory to prepare Wildlife Conservation Plan for Schedule-I Fauna species and same to be approved by Chief Wildlife Warden of the State Government. Thus, we have prepared the conservation plan for Ganges River dolphin (*Platanista gangetica gangetica*) including the allocation of the funds for the implementation of the same. We request you to grant approval of the attached Wildlife Conservation Plan.

We shall be thankful if approval be given to us at the earliest.

Thank you,

Yours faithfully,

Indorama India Pvt. Ltd. * INDORAMA * Haldia *

Chandra Shekhar Prasad

Chief Operating Officer

M/s Indorama India Pvt. Ltd. (Formerly known as IRC Agrochemicals Pvt. Ltd.)

CHAPTER 1. GANGES RIVER DOLPHINS: (CONSERVATION PLAN)

1.1. Ganges River Dolphin

The Ganges River dolphin (*Platanista gangetica gangetica*) is largely solitary and non-gregarious species, occasionally found in small groups. They are essentially blind and hunt by echolocation. They have a sturdy yet flexible body with large flippers and a low triangular dorsal fin weighing up to 150 kg. Calves are chocolate brown at birth and then have grey-brown smooth, hairless skin as adults. Females are larger than males and give birth once every two to three years to only one calf (Herald et al., 1969).

Figure 1.1 : The Ganges River dolphin is essentially blind and move through echolocation (Photo provided by NGO Help Earth)

It is an iconic as well as flagship species and was declared as the National Aquatic Animal on 5th October 2009. Being a top predator, it shapes aquatic species communities particularly benthic and fish communities. Prey availability and water depth are limiting factor for their occurrence (WII-GACMC, 2018). Habitat fragmentation due to the construction of dams and barrages has affected their abundance and population structure of this species due to loss of connectivity. They are also highly vulnerable to poaching and accidental killing (WII-GACMC, 2018).

1.2. Classification

Sl. No.	Parameter	Class
1	Order	*Artiodactyla*

2	Family	*Platanistidae*
3	Genus	*Platanista*
4	Species	*Gangetica*
5	Sub-Species	*Gangetica*

1.3. Status of Ganges dolphin

Due to its declining population, the Ganges dolphin is placed under the "Endangered" category in the IUCN Red List (**Fig. 2.2**). It is also protected under Schedule 1 of the Wildlife (Protection) Act, 1972.

Figure 1.2 : IUCN status of Ganges River dolphin

1.4. Habit and Habitat

Ganges dolphins are carnivores, feeding on fishes like *Channa sp., Puntius sp., Chanda nama, Xenentodon cancila etc.* They prefer smaller sized fishes from families Cyprinid and Perciform for easy swallowing. They do not chew their food, but sometimes may take a bite and swallow. Small sized turtles are also preyed by dolphins. They prefer to breed during pre-monsoon or post-monsoon periods, although they can breed throughout the year. Gestation period is reported between 9-10 months and after which a single calf is delivered.

They inhabit the Ganga, Brahmaputra, and Indus River systems along with their tributaries. They migrate to tributaries and return to larger river channels in the dry, winter season (Smith 1993; Sinha et al. 2000; Sinha and Sharma, 2003). They prefer areas of the river that create eddy countercurrents, such as small islands, sand bars, river bends, and convergent tributaries (Sinha et al., 2014). They prefer deep water areas and pools, with at least 4m depth (WII-GACMC, 2018).

The life span of the Ganges River dolphin is thought to be about 26 years. Habitat selection by dolphins is a complex and dynamic function of food requirement, mate availability, avoidance from predators and competitors and the ability to move between habitat patches (Davis et al., 2002; Schofield, 2003). The distribution of the prey is likely one of the most important factors that influences the dolphin's choice of habitat.

1.5. Historical distribution of Ganges dolphins

Prior to the initiation of water resource development activities in the Ganga River during the 19th century, Ganges River dolphins were distributed between 77°E and 88°E, throughout the Ganga, Brahmaputra/ Meghna and Karanaphuli rivers and their tributaries in India, Nepal and Bangladesh (Sinha et al., 2000). In the Ganga River, their distribution ranged from Haridwar to the Sundarbans and in the Yamuna River, the species was reported up to Delhi (Anderson, 1878; Sinha et al., 2010). During the late 19th Century, about 10,000 Ganges River dolphins were estimated to be thriving in the Ganga and its tributaries (Anderson,1878), however Sinha and Kannan (2014) estimated their population to be 3526 individuals during the early 2000s.

According to these studies, the encounter rate of dolphins was highest in the Vikramshila Ganges Dolphin Sanctuary (1.8/km) area and lowest between Bijnor and Narora (0.36/km). The abundance of the Ganges River dolphin in the VGDS was noted to be 179 and 270 in the mid and peak dry seasons, respectively (Kelkar et al., 2010).

Table 1.1 : Past and present status of the Ganges River dolphins

(Adapted from WII-GACMC, 2018)

River Stretch	**Encounter Rate (Individuals/Km)**		
	Previous Studies	**---**	**Previous Studies (2017)**
Allahabad to Buxar	0.48	Sinha (1999)	0.77
Buxar to Maniharighart	1.62	Sinha et al. (2010)	0.36
Vikramshila Ganges Dolphin Sanctuary	1.8	Choudhary et al. (2010)	0.65
Maniharighat to Farakka	1.64	Sinha (1999)	0.22
Farakka Feeder Canal & Hoogly river (Triveni to Ganga Sagar)	0.55	Sinha et al. (2000)	0.10

1.6. Dolphin distribution and assemblage

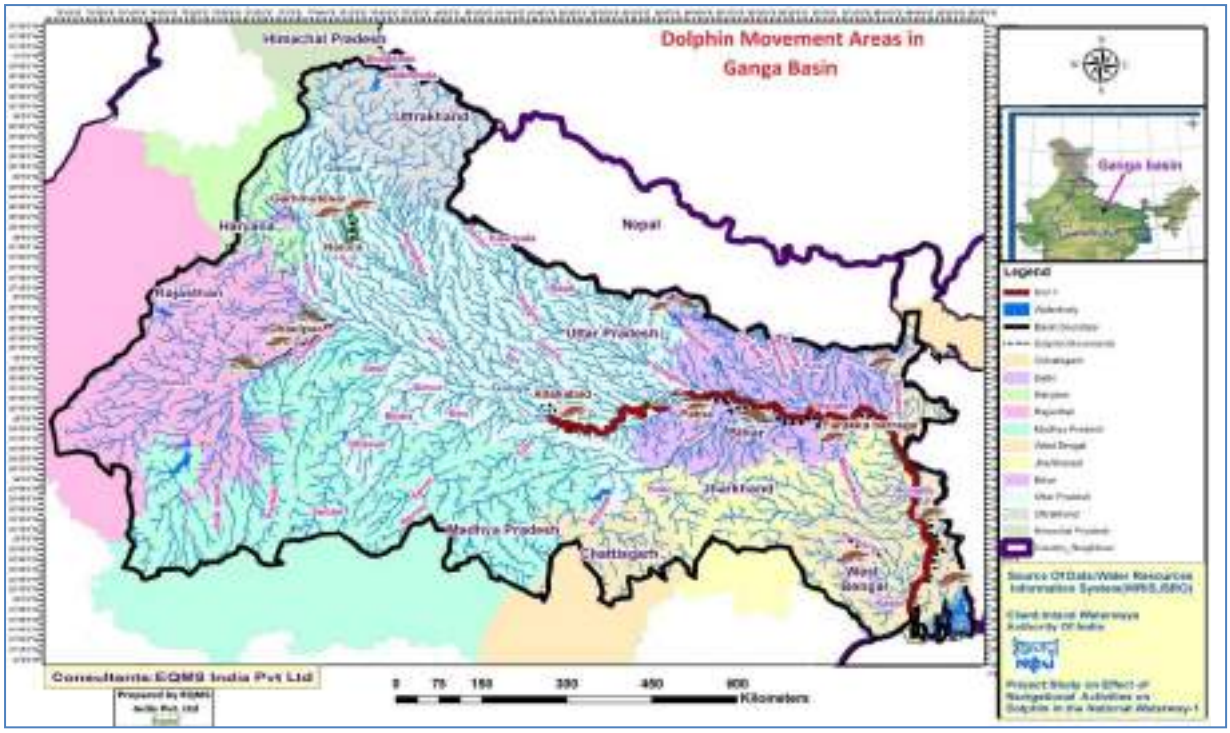
The dolphins were distributed in the whole stretch from Varanasi to Haldia. However, they were not evenly distributed. A dolphin distribution map (**Fig. 1.1**) was prepared

to identify dolphin congregation locations and common movement areas that are inhabited by these animals in most of the season (information of Intensive and random locations). The Ganges dolphin sighting information of intensive sites and random locations were put together in a GIS domain, and it was observed that larger dolphin assemblages were near Ghazipur, Buxar, Patna, Munger, Bhagalpur, Kahalgaon and Farakka. Highest numbers of dolphins were sited near Patna. The Feeder Canal also had a good number of dolphins and even calves.

Previous studies in the Gnaga river also reveal that this stretch of the river has always been a major habitat for Ganges dolphins. However, their encounter is always noteworthy at Buxar to Maniharighat and in the Feeder canal.

Table 1.2 : A comparative assessment of dolphin encounter rate of past studies and study during the lean season during 2017. A definite reduction in the encounter rate has been observed.

River Stretch	**Encounter Rate (Individuals/Km)**		
	Previous Studies	**Author**	**Previous Studies (2017)**
Allahabad to Buxar	0.48	Sinha (1999)	0.77
Buxar to Maniharighart	1.62	Sinha et al. (2010)	0.36
Vikramshila Gangetic Dolphin Sanctuary	1.8	Choudhary et al. (2010)	0.65
Maniharighat to Farakka	1.64	Sinha (1999)	0.22
Farakka Feeder Canal and Hoogly (triveni to Ganga Sagar)	0.55	Sinha et al.(2000)	0.10



Source: IWAI

Figure 1.3 : Dolphin movement and distribution range in River Ganga

1.7. Threats to Ganges dolphins

- Poaching of the species for their oils, used as a fish attractant. The species is also highly susceptible to mortality due to accidental trapping in fishing nets.
- Destruction of breeding grounds of fishes and resulting decline in fish population.
- Diversion of river water for different purposes such as irrigation, hydropower projects etc. resulting in low flow and depth in the river below the minimum requirements of the species.
- Water pollution from both point and non-point sources increases the toxicity levels, increasing risks for aquatic wildlife.
- Construction of dams and barrages has dramatically affected habitat connectivity and hence abundance and population structure of this species. Moreover, dams and barrages degrade downstream habitat and create small reservoirs with high sedimentation and altered assemblages of fish and invertebrate species.
- Potential risks and impacts due to navigational activities on populated sites of Ganges River dolphins

1.8. Legal responsibilities for protection of dolphins with respect to the project

As the Ganges dolphin is placed under the "Endangered" category in the IUCN Red List and also protected under Schedule 1 of the Wildlife (Protection) Act, 1972. With respect to proposed expansion project there will be negligible impact on the dolphin because the project does not have any impact on Hoogly river as well as on Dolphins. As the Dolphin is placed under the "Endangered" category in the IUCN Red List and the species is reported in study area (Hoogly River). From the Dolphin conservation point of view the Company shall also contribute towards the conservation of this species.

1.9. Conservation Budget:

The Gangetic Dolphins have narrowed ecological requirements and a fragmented population structure. Conserving this species requires coordinated efforts among agencies, organisations, and communities within the species range. Conservation issues can best be addressed by adopting population or regional level approaches for sustainable co-management. The intention is to tailor conservation strategies to the specific character of highly threatened ecological environments. It is important to implement the strategies under the leadership of Forest department and community groups or stakeholders.

Hence Company has earmarked a budget of **Rs. 2 Lakhs** for dolphin protection and conservation. This budget will be contributed for conducting awareness programs among nearest schools and communities regarding the following status of vulnerability and conservation strategies for Dolphin.