

Report of the Joint Committee in the matter of OA No. 134/2020 (PB)

REPORT OF THE JOINT COMMITTEE COMPRISING OF CENTRAL POLLUTION CONTROL BOARD (CPCB), ANDHRA PRADESH POLLUTION CONTROL BOARD (APPCB) AND PROF. P JAGANNADHA RAO, DEPARTMENT OF CHEMICAL ENGINEERING, ANDHRA UNIVERSITY, VISAKHAPATNAM IN THE MATTER OF OA. NO. 134/2020 SUBMITTED TO HON'BLE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH, DELHI IN COMPLIANCE TO HON'BLE NGT ORDER DATED JULY 23, 2020.



Photo taken during accident



Photo taken post-accident

Submitted to

Hon'ble National Green Tribunal

Principal Bench, New Delhi

I Preamble

Hon'ble National Green Tribunal Principal Bench in response to the accident occurred at M/s Visakha Solvents Ltd, Visakhapatnam on 13.07.2020 and based on the news item published on 14.07.2020 in daily-India Today titled "Massive fire engulf Vizag chemical plant, explosions heard, injuries reported" took suo-moto case and registered an application No. 134/2020. The Hon'ble NGT, vide order dated July 23, 2020 constituted a joint committee of CPCB, APPCB and Prof. P. Jagannadha Rao, Dept. of Chemical Engineering, Andhra University, Visakhapatnam to ascertain facts, determine responsibility, assess the final compensation for the victims and the environment, to prepare plan for restoration of the environment, suggest precautions for future. CPCB will be the nodal agency and District Magistrate, Visakhapatnam will extend necessary cooperation and facilitate functioning of the Committee.

II Orders of the Hon'ble National Tribunal dated 23.07.2020

*On the pattern of the earlier proceedings, we direct constitution of a joint committee comprising CPCB, State PCB and Prof. P.Jagannadha Rao, Dept. of Chemical Engineering, Andhra University, Visakhapatnam to ascertain facts, determine responsibility, assess the final compensation for the victims and the environment, to prepare restoration plan of the environment, suggest precautions for future. The Committee may visit the site, consider the view point of all the stake holders and give its report within three months by e-mail at judicialngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF. CPCB will be the nodal agency for compliance. The District Magistrate will extend necessary cooperation and facilitate functioning of the Committee. The Chief Secretary, Andhra Pradesh may identify and take action against persons responsible for failure in overseeing the execution of on-site and off-site emergency plans and holding of mock drills as per statutory requirement. The MoEF&CC may look into this incident also while furnishing its report in O.A No. 73/2020, In re: Gas Leak at LG Polymers Chemicals Plant in RR Venkatapuram Village, Visakhapatnam in Andhra Pradesh. Copy of the Hon'ble NGT order dated 23.07.2020 is placed as **Annexure-I**. In compliance to Hon'ble NGT order, committee comprising of following members was composed:*

1. Sri T. Rajendra Reddy, JCEE & Zonal Officer, Andhra Pradesh Pollution Control Board, Visakhapatnam.

2. Prof. P. Jagannadha Rao, Dept. of Chemical Engineering, Andhra University, Visakhapatnam
3. Smt. Mahima T, Scientist-D, Central Pollution Control Board, Regional Directorate, Chennai (Nodal agency)

III Scope of Committee

The Committee has been vested with the mandate to visit and inspect the site in question and vested with following scope vide the Order dated 23.07.2020:

- a. Sequence of events, Causes of failure, ascertain facts
- b. Determine responsibility
- c. Extent of damage to human life and environment
- d. Assess final compensation for the victims and environment
- e. Steps taken for compensating the victims and for restoration of the environment
- f. Measures to prevent recurrence and other incidental issues
- g. to consider the view point of all the stakeholders.
- h. Quantification of final compensation and preparation of restoration plan

III.b Summary of the interim report

APPCB and CPCB submitted interim reports to Hon'ble NGT which were considered during the hearing dated 23.07.2020 and it contains the following:

1. Probable causes of the accident: Soon after the accident on 13.07.2020 District Collector, Visakhapatnam constituted five member committee (including APPCB) and committee so constituted has identified three possible causes for accident and APPCB has documented the findings of the joint committee in the interim report. The three possible causes are air ingress or failure of pumps or presence of impurities in DMSO.
2. Deviations noted in the industry: The interim reports submitted by both CPCB and APPCB have indicated the deviations in standard operating procedure by M/s Visakha solvents that may have caused accident.
3. Suggested remedies to avert such accidents in future: The committee constituted by District Collector has suggested remedial measures to avert such accidents which is documented in APPCB interim report

4. Actions desired by APPCB: CPCB report includes the actions desired by APPCB on account of closure of the unit.

The committee constituted by Hon'ble NGT vide order dated 23.07.2020 studied the report of the Committee appointed by district collector and also interim reports submitted by CPCB & APPCB.

IV Site Visit by the Committee

The committee constituted by Hon'ble NGT vide order dated 23.07.2020 convened its first meeting on 07.08.2020 through video conference (VC) and devised an action plan to proceed further in the case. The committee inspected the unit on 14.08.2020, interacted with unit officials, two persons who were present during the night of the accident and with officials working in neighbouring industries. The Committee monitored the VOC levels during the visit using handheld VOC meter and observed that the VOC readings varied from 4 mg/m³ to 350 mg/m³. The highest reading was recorded near vent of effluent storage tank.

V About M/s Visakha Solvents Ltd, Visakhapatnam

V.a. General information: M/s Visakha Solvents Ltd is a common solvent recovery plant located in CETP premises of Jawaharlal Nehru Pharma city, Parawada, Visakhapatnam (17°38'52.00"N 83° 4'43.36"E) and is categorized by APPCB as Red-Hazardous. The unit was commissioned in November 2009 to process 25 KLD of spent solvents. The unit is located in total area of 0.66 acres and built-up area is around 0.4 acres. Plants were present in the periphery of the unit. The unit expanded during 2018 to process 50KLD of spent solvents. As on date of accident, the consented production capacity of unit is 50 KLD.



1 → entrance

2 → admin block housing one GC to analyse solvents

3 → raw spent solvent storage area, 8 tanks

4 → laboratory

5 → day tanks for holding both for spent solvents and recovered solvents

6 → production block, In first floor five distillation columns were house, II floor pumps, motors and others were house, III floor condenser was housed and on top of third floor scrubber and small cooling tower was housed.

7 → HDPE drums lying in the premises

8 → One transmission tower and one electric pole adjoining to the unit

9 → underground tanks for effluent storage above which drums are placed

V.b. Production process: The spent solvents are distilled in a fractional distillation column/reactor depending upon boiling point of the spent solvent followed by condensation in a single or two stage cooling in primary and secondary condensers. The distillation columns are indirectly heated by steam (steam temperature is around 135⁰C) and vacuum pressure is maintained at

680mm to 720mm of Mercury in columns. The steam required for distillation is supplied by CETP. The unit has five distillation columns each of 5KL reactor capacity and time required for complete reaction varies from 7 to 18 hrs. water is used as cooling medium for condensing the recovered spent solvents. The unit had 12 receivers each of 3KL for receiving the recovered solvent. There were seven recovery day tanks, two tank of 10KL each and five tanks of 20 KL each. The mixed fractions distillation column was stored in drums. The distillation/ process residue is collected in drums and sent to TSDF.

The Distillation of spent solvents was done by vacuum distillation and it was a closed circuit with dry vacuum pump. In the entire distillation process vacuum and temperature play critical role. Solvents should be recovered at a temperature lower than the decomposition temperature of the solvents. For instance, boiling point of spent DMSO is 189⁰C and it starts to decompose at 125⁰C and hence DMSO has to be recovered at temperature lower than 125⁰C by adjusting the pressure.

V.c. Raw material requirement & list of member industries and quantity received

The unit is mainly receiving DMSO (Dimethyl Sulfoxide), Methanol, Toluene, Methanol-Toluene mixture, Methanol-MDC (Methylene dichloride) mixture. The unit has 13 member industries out of which spent solvents is mainly received from pharma industries (M/s Dr. Reddy's and M/s Mylan pharmaceuticals are sending majority of spent solvent). The solvents is received in drums and tankers and recovered solvents are again sold to pharma units. The mixed fractions are sold to paint industry as thinner.

Efficiency of recovery	→75% to 83%
Distillation residue	→ 7% to 10% and
mixed fractions	→ 10% to 15%
Production capacity	→50 KLD of mixed/ spent solvents
Products	→ Recovered solvents from spent solvents/ mixed solvents Distilled solvents/ mixed fraction sold to paint industry as thinner

V.d. Details of solvent storage tanks

Table 1: Solvent storage capacity in the unit

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Sl. No	Details	No. s & capacity		Storage tank capacity	Quantity of solvent remaining in tanks after accident	Quantity of solvent in KL burnt during accident
1	Receiving tanks	7 tanks	6 tanks of 25 KL each	150 KL	valves are closed and tanks and solvents inside the tanks are intact	0 (quantity of left over solvents to be assessed)
			1 tank of 20 KL	20 KL	0 Completely burnt	20 KL
2	Day tanks	3 tanks of 20 KL each		60 KL	Completely burnt	60 KL
3	Reactors/ distillation column	5 no.s each of 5 KL. All reactors are fully charged		25 KL	Completely burnt	25 KL
4	Recovered solvents receiving tanks	12 receivers of 3 KL each		18 KL	Completely burnt	18 KL
5	Recovered solvents storage tanks	7 tanks	2 tanks of 10 KL	120 KL	valves are closed and tanks and solvents inside the tanks are intact	0
			5 tanks of 20 KL each			0
6	drums	160	200L/ drum	32KL	Completely burnt	32 KL
7	Tanker	1		6 KL	Completely burnt	6 KL
Total solvents in KL				431 KL of spent solvents storage capacity		161 KL of solvents burnt

Table 2: Quantity of solvents present and quantity of solvents burnt

Name of solvent	Quantity in KL present before accident (stock)	Quantity burnt in KL
	A	B
Mixed solvents (Methanol-70%, Toluene C ₇ H ₈ -10%, acetone C ₃ H ₆ O-5%, other solvents-15%)	83	45 KL
Acetone	44	24 KL
Methanol +Toluene	119	50 KL
Methylene Di chloride	9.4	6 KL
DMSO	16.9	10KL
IPA-Iso Propyl Alcohol	31	26
Total	303.3 KL	161 KL

The total maximum solvent storage capacity in the unit is 431 KL out of which 303.3 KL of solvents was present during the accident as per the stock details (retrieved from E-mail, all records and hard copies are burnt out). 161 KL of solvents is burnt. Letter given by the unit regarding quantity of solvents is enclosed as **Annexure-II**.

V.e. Properties of solvents charged in the reactor

Sl. No	Solvents	Properties of the material charged in reactors
1	DMSO-dimethyl sulfoxide	(CH ₃) ₂ SO → colourless liquid, denser than air Flash point: 87 ⁰ C to 89 ⁰ C Auto ignition temperature: 215 ⁰ C Vapour pressure: 0.0556 kPa at 20 ⁰ C Closed cup flash point 192 ⁰ F. Vapours are heavier than air. When heated to decomposition, it emits toxic fumes of Sulphur oxides
2	Methanol	CH ₄ OH or CH ₃ O → Colourless liquid, Highly flammable Flash point: 11 to 12 °C

		Boiling point: 64.7 °C Auto ignition temperature → 470 °C Vapour pressure: 13.02 Kpa (at 20 °C)
3	MDC-methylene dichloride	CH ₂ Cl ₂ → Colourless liquid Auto ignition temperature → 556 °C May emit toxic chloride fumes at high temperature Boiling point: 39.6 °C
4	Acetone	C ₃ H ₆ O or CH ₃ -CO-CH ₃ or CH ₃ COCH ₃ Acetone is a Colourless, volatile, highly flammable organic solvent. Will be easily ignited by heat, sparks or flames. Vapours may form explosive mixtures with air
5	Toluene	C ₇ H ₈ Boiling Point-111 °C Vapour pressure-2.8 kPa (20 °C)
6	Iso-propyl Alcohol	C ₃ H ₈ O or CH ₃ CHOHCH ₃ or (CH ₃) ₂ CHOH Volatile, Colourless liquid with a sharp musty Odour

VI Sequence of Events

On 13.07.2020, an accident took place around 10:30 PM at M/s Visakha solvents Limited in which one worker died in the plant and one more worker succumbed to injuries in the hospital. Solvent storage tanks, day tanks, receiving tanks, production block, reactors, condensers, office building are extensively damaged. The sequence of events of the accident on 13.07.2020 are as follows:

13.07.2020 17:30 hrs	In Reactors 101, 102 and 104, batch completed. Reactors cleaned and washwater sent to effluent storage tank. Charging of fresh DMSO in reactors 101 & 102 and MDC & methanol in reactor 104 started.
13.07.2020 20:30 hrs	Charging completed in reactors 101, 102 & 104. Steam and Vacuum applied to reactor 102 and batch started. DMSO that was charged in reactors 101 & 102 were taken from M/s Pratik industries, Hyderabad. Before charging, the spent DMSO was analysed and reported as 97.1% DMSO, 1.32% methanol, 0.84% acetone, 0.44% Toluene, 0.30% moisture and 0.20% impurities (unknown).

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13.07.2020 21:00 hrs	Shift Change. shift incharge-II has recorded low pressure of 350mmof Hg and after change of shift, shift incharge-III (Sh. T. Malleswara Rao) has also recorded low vacuum pressure. Since pressure is decreased the boiling point of solvent is decreased. Decreased vacuum pressure, continuous application of steam resulting in decomposition of mixture and boiling of mixture, increase in vapour pressure.
13.07.2020 21:30 hrs	Likely time of cutting off the steam supply manually by Shift incharge cum Senior operator.
13.07.2020 21:45 hrs	Sh. T. Malleswara Rao. Senior operator informed junior operator Sh. K Srinivas Rao to take sample from reactor 102 and then senior operator went to second floor to check vacuum pumps
13.07.2020 22:00 hrs	After ascertaining of connections and fittings of the vacuum system, the senior operator came down to first floor
13.07.2020 22:15 hrs	Nozzle opened from reactor 102 to take sample and observed smoke from shaft seal of agitator of reactor 102.
13.07.2020 22:20 hrs	The senior operator Sh. T. Malleswara Rao informed to Sh. K. Srinivas Rao- Junior operator who was taking temperature at reactor 104 & 105 to move out of the block. The senior operator screamed fire and started to run towards the unit main gate and escaped with burns. The security guard who was doing rounds in the unit first saw the smoke followed by fire and he along with one chemist who was analysing sample in the laboratory reached the main gate safely unharmed
13.07.2020 22:30hrs 22:40 hrs	first explosion happened i.e reactor 102 exploded with a massive sound and fire. Reactor 102 ruptured. As per statements given by senior operator (before succumbing to injury), chemist and security guard roughly 10 to 15 minutes after fire broke, first explosion occurred followed by second explosion after 10 mins. The senior operator was half way towards the main gate when first explosion happened but escaped with burns at the back
13.07.2020	The concrete ceiling has collapsed. The fire spread to the entire unit and the spent solvent drums stored in the unit started to explode. The solvents in the

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22:45-22:55 hrs	remaining four reactors are completely burnt. The remaining four reactors have collapsed but not fully ruptured.
13.07.2020 23:30 hrs	Officials from APPCB, regional office and Zonal Office Visakhapatnam reached the site around 23:30 hrs and started VOC monitoring.
14.07.2020	Massive fire continued till 3:00 AM on 14.07.2020. All the drums present in the unit exploded. After 3:00 AM, slowly the fire subsided and started burning in small patches. By morning 7:00 AM, the fire was controlled.







VII Causes of Accident

VII.a Immediate trigger to the accident

The reactor or distillation column has to be operated at vacuum pressure in the range of 680mm of Hg to 720mm of Hg. But the operators of both shift-II and shift-III have noted that vacuum pressure

reading was 350mm Hg. This means more vacuum was created inside the reactor. As the pressure decreases the boiling point of solvent also decreases. Due to continuous steam supply, the solvents are heated up, vapour pressure has increased, reactor mixture have started to decompose & boil due to high temperature. This reaction can hold up to a certain level after which it reaches critical point.

At this point of time though steam supply is stopped, but the temperature and vapour pressure inside reactor 102 has built up to a critical level leading to static over pressure or internal blast load and when one of the operator has opened the sampling valve to collect samples, the solvents under very high static load (highly pressurised) have gushed out of the sampling vent (as soon as the solvents have come out of the nozzle have expanded appearing like a smoke) and may have reached auto ignition temperature causing fire outburst. The operators have seen the fire and then the fire has spread into the reactor leading to an explosion of reactor 102 and its rupture. The committee is of the opinion that after the outbreak of fire even if the operators had turned on the flame arrestors it would have been difficult to arrest the fire. Without opening the sampling valve the options that may have prevented the explosion are as follows:

- a. To break the vacuum by passing an inert gas
- b. To cool the reactor by flooding of coolant

The vacuum pump was not working properly and the required vacuum pressure for the reaction i.e. 680mm to 720mm of Hg was not maintained. The unit did not have interlocking facility for critical process parameters such as temperature, pressure and vacuum to auto cut-off steam supply when pressure was very low. Pressure releasing valves were not present in the reactor. In spite of such low pressure, there was no alarm system in the unit to alert the staff. There was no temperature sensors attached to the reactor to indicate the temperature build-up in the reactor. Even the fire alarm and flame arrestors had to be manually operated. Though firefighting measures like fire hydrant & froth system, sprinkler system was present but had to be manually operated. DMSO being heavier than air has moved at lower levels causing fire outbreak which spread into the reactor causing explosion. There was considerable difference in height between auto sprinkler and sampling valve where fire first occurred (the solvents coming out of nozzle auto-ignited). Hence, the only existing auto-safety measure also failed. The unit was functioning on manual intervention and even the critical safety points were not automised.

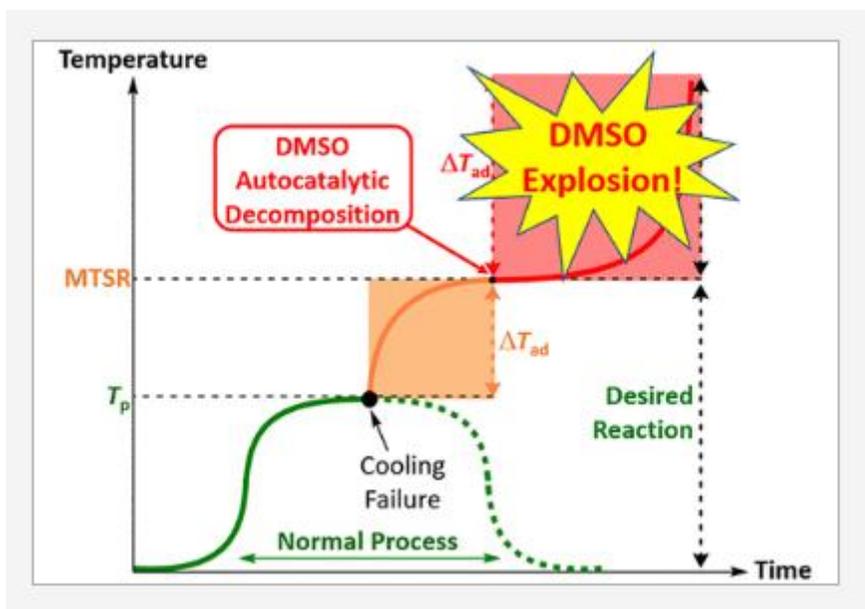
Only four persons including one security person were present during the shift. Persons present in the unit at the time of accident is given in table 3.

Table 3: Details of persons present at the time of accident

Sl.NO	Name of the person present at the time of accident	Age	Designation	Qualification	Experience in the unit
1	Sh. T. Malleswara Rao	33	Shift Incharge-III & Senior Operator	ITI	2 years
2	Sh. K Srinivas Rao	44	Junior operator	10 th	8 years
3	Sh. Manoj Kumar	23	Chemist	M. Sc	6 months
4	Sh. B Chinna Rao	46	Security guard	10 th	Manpower supplied by security agency and persons keep changing

The Shift incharge cum senior operator Sh. T. Malleswara Rao aged 33 years was an ITI graduate with 2 years experience and Junior operator Sh. K Srinivas aged 44 years was 10th standard qualified with 8 years experience. Sh. Manoj kumar aged 23 years was working as chemist in the unit for past six months. This indicates that qualified and experienced persons were not present in the unit at the time of accident.

In spite of both operators recording low vacuum pressure but immediate action is not taken like breaking of vacuum with inert gas and flooding of coolant into the jacket of reactor SSR 102 to cool the reactor. Collection of sample should have completely avoided at this point of time. This indicates lack of training and emergency preparedness of the staff.



MTSR: Maximum temperature for synthesis reaction

Figure: Pictorial illustration of reaction

Table 4: status of reactor at the time of accident

Sl. NO	Reactor	Status
1	101	DMSO charged to reactor but operation not started. Reactor containing 5KL of spent DMSO. Operation was scheduled to start on the morning of 14.07.2020
2	102	Previous batch of DMSO completed at 5:00 PM. Reported that reactor was cleaned new batch of DMSO charged and batch started at 8:30 PM. 17 to 18 hrs batch. 5 KL of DMSO present
3	103	MDC and methanol (MDC-25% and Methanol-75%) under process. 5 KL of spent solvent present
4	104	MDC & methanol mixture (MDC-25% and Methanol-75%) charged but batch not started. Operation was scheduled to start on the morning of 14.07.2020. Reactor contains 5 KL of solvent
5	105	MDC& Methanol (MDC-25% and Methanol-75%) under process. 5 KL of solvent present

The total spent solvents present in reactors is 25 KL and 15 KL under process. Though in other two reactors, process was scheduled for operation on the morning of 14.07.2020 but the reactors

were charged. DMSO charged in reactor 102 where accident occurred was procured from M/s Pratik industries, Pashmailaram, Patancheru, Medak district in Telangana. M/s Pratik industry is having Consent for operation and hazardous waste authorization from Telangana SPCB valid till 31.12.2020.

VII.b. Compliance of the unit with Standard operating procedure for operating Solvent Recovery plant: CPCB issued Standard Operating Procedure and checklist of minimal requisite facilities for utilization of hazardous wastes and Other Wastes (Management and Transboundary movement) Rules, 2016 for “Utilization of Spent Solvent for recovery of solvent” in March, 2018 and again revised in August, 2019. (Revised version of the SOP prepared in June, 2016 and circulated vide letter dated 30.06.2016). The CFO issued by APPCB is enclosed as **Annexure-III**. The compliance status of the unit with SOP is given in table 5.

Table 5: Compliance status of unit with SOP for operating SRP as per the inspection report of APPCB dated 01.04.2019

SL.No.	Standard operating Procedure for Utilization	Compliance status
1	The spent solvents containing Toluene, Xylene, Cyclohexane, Acetone, Methyl isobutyl Ketone, Methanol, Iso propyl alcohol, Methylene Dichloride, Tetra hydro furan, Ethyl Acetate, Iso propyl ether, Dimethyl formamide, Butyl Acetate, Methyl acetate, Butanol, Benzene, Ethanol and Methyl ethyl ketone shall be procured only in tankers/drums.	The industry procuring the solvents only in Tankers/drums
2	The spent solvents shall be transferred from tankers/drums to the raw material storage tank and to distillation column by solvent transfer pump.	Complied
3	Transportation of spent solvents shall be carried out by sender or receiver (utilizer) only after obtaining authorization from the concerned	Complied

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	SPCB under the Hazardous and other wastes(Management & Transboundary movement) Rules,2016	
4	It shall be ensured that the aforesaid hazardous waste is procured from the industries who have valid authorization for the same from the concerned SPCB as required under Hazardous and other wastes (Management & Transboundary movement) Rules,2016	The industry was informed to submit the six months reports
5	During loading and unloading of spent solvents/ Recovered solvent from tanker to storage tank to Tanker, vent (of both storage tank to Tanker) shall be connected to each other so as to minimize VOC emissions.	Complied
6	Vent of storage tanks (i.e. Spent Solvent and Recovered Solvent) shall be connected through condenser.	Not provided
7	All the vehicles entering the utilization premises shall be fitted with the spark arrestor.	--
8	The vent of the condenser shall be at least 06 meters above the roof top or at height prescribed by SPCB/PCC, whichever is higher.	Complied
9	The vent of the condenser shall be passed through VOC absorption media like activated carbon and shall comply with the prescribed standards.	Not provided. Not complied
10	The unit shall maintain proper ventilation in the work zone and process areas. All personnel involved in the plant operation shall wear proper personal protective equipment such as	As on date of inspection found complying.

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	hard hats, goggles, face shield, steel toed shoes, gloves, aprons, respirators etc.	
11	The unit shall provide laboratory facility for analysis of solvent.	The facility is having lab for analysis of solvent
12	The unit shall provide suitable fire safety arrangements and spark/flame proof electrical installation/fittings.	Provided
13	The unit shall obtain license from Petroleum and Explosive Safety Organization of Govt. of India.	The license not obtained by the facility.
14	The spent solvents generated from Pesticides industry shall not be mixed with any other spent solvent and be distilled separately in separate batch. The Solvent recovered from spent solvent generated from Pesticides industry shall preferably be sent to the generator itself or other pesticides manufacturing units. However, such recovered solvent shall not be used in the process of production of pharma, food, and cattle feed.	The facility not using the spent solvents generated from Pesticides industry
15	The packing of products i.e., recovered solvent shall be labelled as " The product has been recovered from spent solvent generated from Pesticides/Dye and Dye intermediate industries/Drugs/etc. (as the case may be) manufacturing process".	--
16	Residue generated from the distillation unit shall be packaged and temporarily stored in a dedicated hazardous waste storage area within the unit. The same shall be disposed in common	The facility disposing the hazardous waste to TSDF

	Hazardous Waste Treatment Storage Facility or sent to cement kilns for co-processing/ utilization at facility, as authorised by the concerned SPCB/PCC.	
17	The unit shall ensure that all the discarded/used drums/barrels are either sent back to the unit from the where the spent solvents is procured or to the facility who has authorisation for utilization of used drums/barrels or to the common Hazardous Waste Treatment storage and Disposal facility (CHWTSDF) for disposal, as authorized by the SPCB/PCC.	Sending drums to authorized parties.
18	The condensate water from distillation and effluent generated from cooling tower shall be managed as per the conditions stipulated by the concerned SPCB/PCC under the water (Prevention and control of pollution) Act, 1974.	The facility is sending effluents to CETP of Ramky
19	Transportation of the residue generated during the utilisation process shall be carried out by sender or receiver (TSDF operator) as per the authorization issued by the concerned SPCB in accordance with provision under the Hazardous and other Waste (Management & Transboundary movement) Rules,2016	Complied
20	In case of environmental damages arising due to improper handling of hazardous wastes including accidental spillage during generation, storage, processing, transportation and disposal, the unit shall be liable to implement immediate response measures, environmental site assessment and remediation of	--

	contaminated soil/ground water/ sediment etc. as per the "Guidelines on implementing Liabilities for Environmental Damages due to Handling & Disposal of Hazardous Wastes and Penalty" publish by CPCB.	
21	During the process of utilization and handling of hazardous waste, the unit shall comply with the requirements in accordance with the Public Liability Insurance Act, 1991 as amended, Wherever applicable.	The facility is having valid PLI policy.

No proper safety measures such as auto cut-off system with interlocking to temperature (steam supply) and pressure, no alarm system to alert the staff on critical operational parameters, lack of training to the staff, persons with limited experience and qualification working in the shop floor, improper handling of raw material, citing of the unit near to transmission tower, no separate shed for storing distillation residues, temporary arrangement such as use of hose pipe to transfer solvents, absence of pressure release valves are all the causes for the accident. Because these non-compliances one or the other day may lead to an accident. The immediate trigger to explosion was improper working of vacuum pumps → decrease in vacuum pressure reading or increase in vacuum in the reactor → increase in vapour pressure leading to static over pressure or internal blast load reaching critical points in the absence of pressure release valves in the reactor → opening of nozzle for sample collection at the same time → expansion reaction appearing like smoke → auto ignition causing fire → fire spreading to reactor causing explosion & rupture of reactor 102 → fire spreading to entire unit and engulfing it.

VII.c. Who is responsible for accident: It is the primary responsibility of the unit to establish infrastructure facilities for its safe operations and to provide safe working conditions to its employers. It is the responsibility of the unit to comply with all statutory, regulatory, safety clearances stipulated by various concerned departments. Equal responsibility also lies with the operators to ensure safe operation, on recording such low pressure, the operators could have

immediately stopped steam supply. **The unit M/s Visakha Solvents and its employers are solely responsible for the accident. The main cause for the accident is failure to comply with safety guidelines.**

APPCB issued amendment for change of name vide order dated 18.09.2010 by stipulating condition that M/s Ramky Pharmacy shall have the overall responsibility for operation and maintenance of solvent recovery unit along with other infrastructural facilities. In any case, M/s Ramky Pharmacy Pvt Ltd., would stand to continue answerable for environmental impacts/damage caused due to the operation of solvent recovery unit. Hence, **the unit M/s Visakha Solvents and M/s Ramky Pharmacy are liable to pay the compensation.**

VIII Damage Assessment and Calculation of Compensation

A major accident occurred at M/s Visakha Solvents and it was most unfortunate. But even in this unfortunate incident, the best thing was fire moved vertically upwards and had it spread horizontally, it would have been very devastating. The vegetation cover around the unit followed by open spaces, wind direction and wind speed prevented the fire from spreading to neighbouring industries and fire was confined only to the premises of M/s Visakha Solvents. The damages that occurred due to accident are as follows:

VIII.a. Loss of life and status of award of compensation: Only four persons were present in the unit at the time of accident out of which one person was found dead in the accident spot and other person succumbed to injury in the hospital. As per the report given by District administration, only two persons have died.

VIII.a.i K. Srinivasa Rao, Junior operator was found dead in the accident spot.

Sh. K. Srinivasa Rao aged 44 was charred to death. As per the post-mortem examination, the body was found in pugilistic attitude which is caused by coagulation of muscle proteins when body is exposed to extremely high temperature. The whole body surface burns noted and reddish brown fluid purging out of nose and mouth on tilting of body. Based on the post mortem examination the committee recommends that Sh. Srinivas Rao died because of the accident and is liable to be compensated. The State of A.P has declared the compensation of Rs. 50.00 lacs(35.00 lacs to be paid by unit and Rs.15.00 lacs by state of A.P) out of which the unit has already paid Rs.35.00 lacs to the dependent members of deceased.

To ascertain the adequacy of compensation, the committee has calculated compensation by two methods: 1. As per the Judgement dated 16th August 2019 of Hon'ble Supreme Court of India in civil appeal No. 6339 of 2019 in the matter of Sunita Tokas vs New India Insurance Co. Ltd. & civil appeal No.3483 of 2008 and as per Employee Compensation Act, 1923 and the highest among two is taken to determine whether compensation of Rs.50.00 lacs is adequate or not.

As explained in table 6 and table 7, Based on Hon'ble Supreme Court of India in civil appeal No. 6339 of 2019 & civil appeal No.3483 of 2008 and as per Employees Compensation Act, 1923 the compensation amount of Rs.50.00 lacs **fixed by the State of A.P is adequate.**

VIII.a.ii *Sh. Malleswara Rao (alias Maneswara Rao as per aadhar card), Senior Operator aged 33 years- Deceased*

Sh. Malleswara Rao senior operator suffered burnt injuries on 13.07.2020 during accident but managed to escape during the fire accident. He was taken to hospital for treatment but he succumbed to the injuries one week post-accident in the hospital. The committee recommends that Sh. Malleswara Rao died because of the accident due to burns & inhalation of solvent vapours and is liable to be compensated. The State of A.P has declared the compensation of Rs. 50.00 lacs(35.00 lacs to be paid by unit and Rs.15.00 lacs by state of A.P) out of which the unit has already paid Rs.35.00 lacs to the dependent members of deceased.

As explained in table 6 and table 7, based on Hon'ble Supreme Court of India in civil appeal No. 6339 of 2019 & civil appeal No.3483 of 2008 and as per Employees Compensation Act, 1923 the compensation amount of Rs.50.00 lacs **fixed by the State of A.P is adequate.** The unit has paid the employer share of Rs.35.00 lakhs to the dependents of the deceased.

Table 6: Assessment of compensation

Name of the deceased	A*	OR	B
	Amount of compensation in INR as per Hon'ble Supreme Court	Whichever is more is considered by the committee to ascertain	As per Employee Compensation Act, 1923

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	Judgement in civil appeal No. 6339 of 2019 and civil appeal No.3483 of 2008	the adequacy of compensation	
Late Sh. K. Srinivasa Rao, Junior operator	28,87,200/-		Compensation= fifty percent of the monthly wages of the deceased x relevant factor = Rs. 7500/- x 175.54 & = Rs. 13,16,550-
Late Sh. Malleswara Rao, Senior Operator	39,28,800/-		Compensation= fifty percent of the monthly wages of the deceased x relevant factor = Rs. 7500/- x 203.85& = Rs. 15,28,875/-

* A → calculation is explained in table-7.

& → As per EC Act, 1923 the Central Government has specified Rs.15,000/- as monthly wages with effect from 03.01.2020. The relevant factor as per EC Act, 1923 is (the completed years of age on the last birthday of the workman immediately preceding the date on which the compensation fell due).

Table 7: A → Amount of compensation in in INR as per Hon'ble Supreme Court Judgement in civil appeal No. 6339 of 2019 and civil appeal No.3483 of 2008

Name	DOB Or Age at the time of death	Qualificati on & Designatio n	Salary per month for permanent employee	Future prospect s (40% of the income)	less tax	Salary after deducti ng tax	Deduction towards personal expenses	Loss of mont hly incom e to the dependen ts	An nua l inc om e	loss of fut ure inc om e	Expen ses for shiftin g mortal remain s and Loss of estate & funera l expens es(app . cost)	Loss of Lov e and affe ctio n	Compensati on
			A	B	C	D	$E^T=50\%$ of D	$F=D-E$	G	H [#]	I ^{\$}	J ^{&}	$L=(F*G*H)+I+J$
K. Srinivas Rao	44	10th pass	22000	8800	-	30800	15400	15400	800	258720	100000	200000	2887200

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Sh, Mallew ara Rao	33	ITI	27000	10800	-	37800	18900	18900	800	362 226 880 0	10000 0	200 000	3928800
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^T Deduction towards personal expenses varies @50% for age of the deceased 20yrs to 50yrs and @40% for age of the deceased more than 50yrs.

[#] Depending on the age, the factor is fixed. 14 for age group 41-45 years and 16 for age group 31-35 years

^{\$} Entire responsibility taken by unit for shifting mortal remains

[&] The committee fixed the amount as Rs.2,00,000/- for loss of love and affection

[@] The committee fixed the amount as Rs.1,00,000/- for loss of estate, funeral expenses and for shifting mortal remains

VIII.a.iii *Sh. Manoj Kumar, Chemist aged 23 years and Sh. Chinna Rao, Security Guard aged 46 years*

These two persons reached the main gate unharmed. The committee is of the opinion that they are not liable for monetary compensation but during the accident, the employees have inhaled gases, solvent vapours, unburnt residues, ash etc emanated during accident which may have immediate and long term impact on their health. In view of the above, the health conditions of these two employees shall be ascertained by qualified medical practioner and based on the recommendations of the medical practioner, the District Magistrate may fix the amount of compensation as per Employee Compensation Act, 1923. If the employees desire to have further health monitoring, the unit shall tie-up with a hospital and the health profile of the two employees shall be monitored for a minimum period of two years (once in six months health monitoring). During the period of the monitoring, if the hospitals observe variations in the health profile and if the qualified medical practioner are able to establish that it is due to accident or occupational exposure of solvents then the unit is liable to pay compensation to these two employees as per Employee Compensation Act, 1923. The expenditure incurred towards testing and monitoring shall be completely borne by the unit. The six-monthly health reports of these two employees shall be submitted to district administration. Further the health profile of the employees may be reviewed annually by a Government Doctor.

VIII.b Loss of Vegetation: From the satellite images, it is evident that the unit was surrounded by green belt followed by open spaces which prevented the spreading of fire. During the committee inspection, burnt trees were observed. The committee has considered loss in vegetation in two ways:

VIIIb.i Loss in vegetation due to industrial activity/ deforestation by the unit

The committee has considered the historical satellite image of 07-12-2019 and latest image of 12.04.2020.



GE image of 07.12.2019



GE image of 12.04.2020

The unit has cleared the vegetation on the backside of the unit (land belongs to pharmacy) to store the solvent drums. The committee has attributed this loss in vegetation to industrial activity and is liable to pay environmental compensation. The deforested plot area is 50.51mx 52.09m (2631.066 sqm or 0.65 acres). The committee Consulted Forest Department and it was informed that about 2.0 lakhs per hectare is charged for compensatory afforestation. Since the unit was responsible for cutting fully grown-up trees, the committee fixes an Environmental compensation attributed on account of causing deforestation is Rs. 2,00,000/- . In addition, the unit shall take complete responsibility to develop green belt in the area where trees were cut.

VIII.b.ii Loss in vegetation due to accident: The plantation in the entrance of the unit was burnt. The burnt plantation area is around 0.05 acres. The unit shall take complete responsibility to develop green belt in the area where trees were burnt and also all along the periphery of the unit.

VIII.c. Contribution of Emissions into the atmosphere: Emissions or pollutants are released into atmosphere on account of burning of solvents. Since the data on precise quantity of solvents burnt on the day of accident is not available. The committee has used reverse calculation:

Table 8: Assessment of quantity of solvents burnt

Quantity of spent solvents burnt	=	161 KL of solvents burnt

		Name of solvent	Quantity burnt in KL	Density	Quantity burnt in MT
		DMSO	10KL	1.1004 g·cm ⁻³	11.004
		MDC	6 KL	1.3266 g/cm ³ (20 °C)	7.9596
		Methanol +Toluene (75% MEOH+25% Toluene)	50 KL	MEOH-0.792 g/cm ³ Tol-0.87 g/mL	29.7-MEOH 10.875-Tol
		Mixed solvents (Methanol-70%, Toluene C ₇ H ₈ -10%, acetone C ₃ H ₆ O-5%, other solvents-15%)	45 KL	0.792 g/cm ³ (density of methanol is considered since it is the major component)	35.64
		Acetone	24 KL	0.7845 g/cm ³ (25 °C)	18.828
		Iso Propyl alcohol (IPA)	26 KL	0.786 g/cm ³	20.436
		Total	161 KL		134.4426
Distillation residue burnt	=	As per the records of CWMP, average 3 tonnes of distillation residue is generated. (8 to 8.5 tonnes of waste is sent to TSDF in once in two to three days). On 09.07.2020 waste is sent. Waste generated from 09.07.2020 to 13.07.2020 was lying in premises. 3tonnes per day x 5 days 15tonnes			

Table 9: Gases likely to be released by the solvents

Chemical name	formula	Most emitted gases after explosion	Reference
DMSO→ dimethyl sulfoxide	C ₂ H ₆ OS	Sulphur dioxide, carbon dioxide, methyl mercaptans & formaldehyde which is combusted to release SO ₂ & CO ₂ SO ₂ , CO ₂	https://pubchem.ncbi.nlm.nih.gov/compound/Dimethyl-sulfoxide
Methylene di-chloride	CH ₂ Cl ₂	Phosgene, hydrogen chloride and carbon monoxide COCl ₂ , HCl, CO	https://pubchem.ncbi.nlm.nih.gov/compound/6344
Methanol	CH ₃ OH	Carbon dioxide	https://pubchem.ncbi.nlm.nih.gov/compound/887
IPA	C ₃ H ₈ O	Carbon dioxide	
Acetone	(CH ₃) ₂ CO	Carbon dioxide	https://pubchem.ncbi.nlm.nih.gov/compound/180

The chemical reactions that may have taken place during explosion and gases that are likely released are as follows:

Table 10: gases emitted during explosion and combustion of solvents

DMSO reaction								
$C_2H_6OS + 4O_2 \rightarrow SO_2 + 2CO_2 + 3H_2O$								
C ₂ H ₆ OS	+	4O ₂	=	SO ₂	+	2CO ₂	+	3H ₂ O
78.13344	+	31.9988	=	64.0638	+	44.0095	+	18.01528
11.004 MT	+	18.02 MT	=	9.02 MT	+	12.39 MT	+	7.61 MT
MDC combustion reaction								
$CH_2Cl_2 + O_2 \rightarrow CO_2 + 2HCl$								
CH ₂ Cl ₂	+	O ₂	=	CO ₂	+	2HCl		

84.93258	+	31.9988	=	44.0095	+	36.46094
7.9596	+	2.99	=	4.12		6.83
MT						
Methanol+Toluene combustion reaction						
2CH ₃ OH+ 3O ₂ → 2CO ₂ + 4H ₂ O						
C ₇ H ₈ + 9O ₂ → 7CO ₂ + 4H ₂ O						
2CH ₃ OH	+	3O ₂	=	2CO ₂	+	4H ₂ O
32.04186	+	31.9988		44.0095	+	18.01528
65.34 MT	+	97.87 MT	=	89.74 MT	+	73.47 MT
C ₇ H ₈	+	9O ₂	=	7CO ₂	+	4H ₂ O
92.13842	+	31.9988	=	44.0095	+	18.01528
10.875	+	33.99	=	36.36	+	8.50
Acetone combustion reaction						
(CH ₃) ₂ CO + 4O ₂ → 3CO ₂ + 3H ₂ O						
(CH ₃) ₂ CO	+	4O ₂	=	3CO ₂	+	3H ₂ O
58.07914	+	31.9988		44.0095	+	18.01528
18.828	+	41.49		42.80	+	17.52
Iso Propyl Alcohol combustion reaction						
2C ₃ H ₈ O + 9O ₂ → 6CO ₂ + 8H ₂ O						
2C ₃ H ₈ O	+	9O ₂	=	6CO ₂	+	8H ₂ O
60.09502	+	31.9988	=	44.0095	+	18.01528
20.436	+	48.96	=	44.89	+	24.50

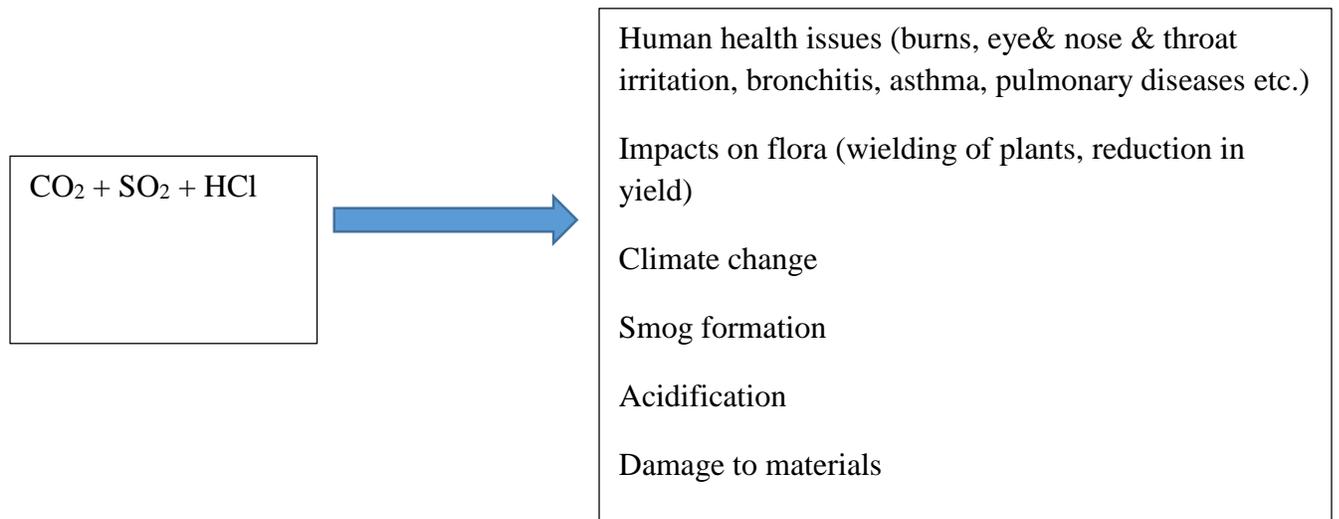
The total emissions contributed into the atmosphere by combustion of 161 KL of solvents is as follows:

SO₂ → 9.02 MT

CO₂ → 230.3 MT

HCl → 6.83 MT

VIII.d Valuation of environmental damages due to ammonia release: SO₂, CO₂ and HCl gases so released into the environment will impact on human well being either directly or by the formation of secondary pollutants. The damage caused and the level of impact due to emissions is expressed in monetary terms by the committee which is one of the ways by which the scale of impact can be communicated. In order to quantify the impacts in monetary terms, it is essential to understand the mechanism by which the impact happens. The impact pathway reveals, how emitted pollutants lead to different adverse outcomes on human wellbeing and other natural environment. The committee has used both market price method and opportunist cost method to express the damage in monetary terms.



UK-Defra values have been referred by the committee for assessing the damages. In the matter of OA 22/2020 (PB) in which CPCB was nodal agency, the committee has assessed environmental prices in INR for major environmental pollutants and report is submitted to Hon'ble NGT. The environmental prices in INR for the damage is taken from the report.

SO₂ → 9.02 → Rupees 2.1989 lacs per tonne of emission

CO₂ → 230.3 → Rupees 0.225 lacs per tonne of emission

HCl → 6.83 → Rupees 0.2189 lacs per tonne of emission

Table 11: Valuation of damages

Pollutant	SO ₂	HCl	CO ₂	Total
Pollutant load (a) in tonnes	9.02	6.83	230.3	246.15
Damage value per tonne in INR lacs (b)	2.1989	0.2189	0.0225	2.4403
Damage value in lacs (c= a*b)	19.83408	1.495087	5.18175	26.5109
15 tonnes of distillation residue is burnt. The treatment cost of residue is Rs. 10,000/- . Since it was directly let out into atmosphere and cost of treatment is to be compensated by unit. =15 tonnes x Rs 10,000/- per ton of distillation residue =1,50,000/- =1.5 lacs				
Total valuation of Environmental damages due to emissions				Rs. 28,01,092/-
Rupees Twenty Eight Lacs One Thousand Ninety Two only				

UK-Defra values published in October 2018 are adopted for considering nature of impact.

Ref: Environmental Prices Handbook, EU28 version.
<https://www.cedelft.eu/en/publications/2191/environmental-prices-handbook-eu28-version>.

From table 11, the committee estimates that total environmental damage of Rupees Twenty Eight Lacs One Thousand Ninety Two only due to air pollution caused by explosion and fire at M/s. Visakha Solvents, Visakhapatnam.

The committee interacted with two persons who survived the accident and also with surrounding industries. None of them complained about any smell or odour nuisance or any discomfort during the accident. Officials from APPCB, regional office Visakhapatnam worked in the accident site on 13.07.2020 at 11:45 till 14.07.2020 till 17:00 hrs. APPCB have monitored VOC's and other gases in the unit premises. The committee interacted with APPCB officials and they informed that the values of VOC's and CO was less, higher values of SO₂ was recorded. Explosion and massive fire has caused extremely high temperatures and at that high temperature, gases are completely burnt and chances of VOC emissions may be less.

VIII.e. Damage to property in terms of material loss: The explosion created massive noise and this caused the glasses in window pane to break in neighbouring industries. Huge sound and noise has occurred during the accident however during the committee inspection, the sound levels were low since no industrial activity is taking place in the premises. The committee could not assess EC for the impact caused due to noise pollution but the unit will take complete responsibility for installing the broken glass. Three reactors are completely damaged, one tanker, one car and two motor cycles are completely burnt out. If the car and motorcycles belonged to the employees, the cost of the same shall either reimburse to the employees or new ones shall be provided.

VIII.f. Damage to soil: The soil is contaminated by burnt ashes, solvents and other chemicals. The unit and Ramky pharmacy shall make earthen bunds along the periphery of the unit and prevent run-off from the premises to join drains or other water sources. Top soil upto a depth of 50cm to 1m shall be removed and sent to TSDF.

VIII.g. Total Compensation M/s Ramky Pharmacy and M/s Visakha Solvents is liable to Pay

- a. Compensation to the deceased persons → Rs.70,00,000/-
- b. Environmental Compensation for loss of vegetation → Rs.2,00,000/-
- c. Environmental Compensation on account of contribution of emissions into environment → Rs. 28,01,092/-

The unit has paid the compensation of Rs.35.00 lakhs each to the dependents of the deceased and disbursed through the District Commissioner or through the Officer identified by state of A.P. M/s Ramky Pharmacy and M/s Visakha Solvents jointly shall pay the Environmental Compensation of Rs. 30,01,092/- (Rupees Thirty Lacs One Thousand Ninety Two only) to CPCB.

IX Restoration Plan

IX.a Restoration measures

Sl.No	Restoration Measure	Time limit
1	Construction of earthen bunds to arrest runoff	To be completed latest by December 01, 2020

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2	The effluent stored in two effluent storage tanks (High TDS and low TDS tanks) shall be sent to Ramky CETP. After sending the effluent to CETP, the solids settled at the bottom of tanks shall be removed and sent to M/S Coastal Waste Management Project (TSDF) for incineration. APPCB & Inspectorate of Factories shall monitor this activity and photos will be taken and report to Hon'ble NGT. Utmost precautions will be taken while removing the settled solids from the tank following all safety requirements. The workers involved will be provided with PPE's.	To be completed latest by December 15, 2020
3	During the visit the committee observed that solvents stored on storage tanks and in recovery tanks were intact. The leftover solvents from the tanks shall be either sent to TSDF for incineration or cement plant for co-processing. APPCB & Inspectorate of Factories shall monitor this activity and photos will be taken and report to Hon'ble NGT.	To be completed latest by December 15, 2020
4	Demolition of existing structure and disposing the C & D waste also to TSDF as it is likely to be contaminated. The reactors and equipment can be re-used	January 31, 2021
5	Plantation of sapling at all places where unit has carried out deforestation and in spaces where plants are burnt	To be completed by May 30, 2021
6	Excavation of minimum top 50cm soil from the entire premises and send to TSDF. The quantity of excavated earth removed by unit and received by TSDF shall be verified by APPCB and ensured that correct hazardous waste returns are filed. APPCB shall involve in the process of clean up. The photos and report of the same shall be furnished to District Magistrate. APPCB shall monitor the premises after the removal of top soil, if any dumps are found in the premises, the same can be removed and sent to TSDF.	To be completed by May 30, 2021

	<p>The TSDF after receiving the waste from the unit shall analyse and dispose the waste suitably either for landfilling/ incineration/ partly for both. After analysis the TSDF shall furnish a copy of the analysis results to APPCB and to the committee. APPCB may collect random samples from site and analyse in their laboratory to cross-verify the correctness of test report of TSDF.</p> <p>The entire clean-up work shall be carried out by unit and Ramky pharncity responsibly and shall be monitored by APPCB. The surrounding industries will also watch on the activity. The drains surrounding the unit shall be checked for any dumping of waste/ effluent. If the unit is found violating, then both the unit and Ramky pharncity may be heavily penalised in addition to booking criminal cases against them.</p>	
7	APPCB shall monitor noise and ambient air quality during demolition and shifting of waste to TSDF.	-
8	After the above actions, Ramky Pharmacity may rent out the plot to an industry with low fire hazard potential considering its proximity to transmission towers.	-

IX.b *Alternate arrangement for disposal of spent solvent by member industries:* The unit was a common spent solvent recovery plant taking spent solvents from different industries from Andhra Pradesh and Telangana recovering it and after recovery either returning back to mother industry or to other industries. The spent solvents so generated from the member industries of M/s Visakha Solvents has to be safely disposed. Hence immediately after accident, CPCB had informed APPCB to chalk out alternate arrangements for the member industries. APPCB regional office Visakhapatnam informed to the committee that there are 8 stand-alone solvent recovery units apart from more than 50 captive solvent recovery plants in Andhra Pradesh & the industries who were supplying spent solvents to M/s Visakha Solvents were informed to give to other solvent recovery unit.

X View Points of Stakeholders and neighbouring industries: The committee interacted with industry personnel and representatives from the surrounding industries who were present in their respective industry at the time of accident at M/s visakha Solvents

X.a. Sh. Sudhakara Reddy, Managing Director, M/s Visakha Solvents

The actual cause for the accident is still under investigation by the unit and by M/s Ramky pharmacy. The unit has submitted that they were complying with all points of SOP's except two and CFO conditions stipulated by APPCB. The unit has collected all surface runoff and sent to CETP. It is informed that only surface discolouration in some areas is observed. The unit has already engaged MoEF & CC registered and NABET and NABL accredited third party to study the area and prepare remediation plan. The submissions made by the unit is placed as **Annexure-IV**.

X.b. Sh. Manoj Kumar, Chemist and Sh. Chinna Rao Security Guard present during the accident. The committee interacted with Sh, Manoj Kumar through video call. He informed to the committee that the he work was going on as usual and suddenly he observed major fire and he started running towards main gate. 10 mins later an explosion happened. Presently he is fine and he is not having any health issues.

X.c. Sh. Kasi Viswanadha Rao and Sh. S. Mohana Rao, Mahidhara Chemicals Pvt. Ltd., Reported that the accident occurred on 13.07.2020 at night around 22:35 to 22:40 hrs. First the staff heard huge light, sound along with fire and again after few minutes they heard huge sound, light and fire. But they did not feel any smell or discomfort.

X.d Sh, U Lakshmana Rao, Sh.P. Kiran Kumar and Sh. L. Srinivasa Rao from M/s Vasudha pharma Chem Ltd located 200m North of Visakha solvents informed that accident happened on 13.07.2020 at 22:45 hrs and caused panic to neighbouring industries. There was no smell and 75 glasses were broken.

X.e. Sh. D. Bhaskara Raju (Production-Executive), Sh. I Nooka Raju (Production- Officer), Sh. L. Rama Murthy (Production- Sr Operator), Sh. V. Mahesh (Production- Workman) and Sh. G.

Sathyanarayana (Electrician) from M/s Mahi drugs Pvt ltd located west of Visakha solvents first heard big sound and light with fire at 22:40 hrs., immediately electrical person shutdown the main power and started DG set in Mahi Drugs. Glass of security room is broken. No personal property of employees is damaged. No smell or fumes observed.

Xf. Actions taken by APPCB

APPCB issued stop production order on 14.07.2020 by withdrew of CFO & HWA orders. The copy is enclosed **Annexure- V**. Show cause notice dated: 22.07.2020 was issued to M/s.Visakha Solvents for levy of interim environmental compensation of INR 1.0 Crore. However the unit has not paid the interim environmental compensation of INR 1.0 Crore to APPCB. Copy enclosed as **Annexure-VI**.

XI Suggested remedies to avert such accidents in future

XI.a The committee suggests following remedial measures

1. To conduct periodical mock drills to the employees in controlled environment on actions to be taken during failure of critical process parameters
2. To impart regular training to the staff and to make them aware about process details, process functionalities. The industry shall train its employees to deal with emergencies arising out of leakage, abnormal temperature & pressure readings, increased emissions, pump failures, failure of air pollution control devices, effluent treatment plant, shock loads or any other accidents likely to occur due to particular industrial activity. Overall the industries should be prepared for emergency response readiness & effectiveness in terms of major & minor accidents.
3. To recruit competent and qualified staff
4. APPCB shall accord CFO and authorization to only those solvent recovery plants complying with Standard operating procedure stipulated by CPCB
5. The distillation units shall install double valve system for taking samples during the process to minimize air ingress.
6. To provide interlocking arrangement for critical process parameter and pollution control systems. For example: If temperature is increasing exorbitantly, the application of steam

- or heat should be automatically stopped and purging of coolant or other means to reduce the temperature to desired range should be automatically done.
7. There should be auto alarm system or siren system to alert the employees in case of any deviations noticed in process parameter.
 8. Vacuum distillation units/ autoclaves should be provided with pressure relief valve, pressure gauge and safety valve or rupture disc in the reactors.
 9. Fixed pipelines with metering pumps will be provided for solvent transfer up to Day tanks/reactors. Any reaction upsets will be confined to the reaction vessel itself as defined quantity of charges of raw materials is issued to the reaction vessel/Day tank by metering pumps.
 10. Flame arrestors, water curtains and other fire safety arrangements shall be installed. Spark / flame proof electrical fittings shall be installed.
 11. The spent solvents shall be procured from only those industries having hazardous waste authorization from respective SPCB's/ PCC's.
 12. Utility like Chilling, cooling, vacuum, steaming and its alternative will be provided to control reaction parameters in a safe manner.
 13. Free Fall of any flammable material in the vessel will be avoided
 14. Static earthing provision will be made at design stage to all solvent handling equipment, reactors, vessels etc
 15. Reactor vent line will be connected with reflux unit or condenser in case of VOC or with scrubber in case of toxic gas generation in reaction.
 16. All emergency valves and switches and emergency handling facilities should be easily assessable.
 17. All the vessels should be examined periodically by a recognized competent person under the Factory Act.
 18. All the vessels and equipment should be well earthed appropriately and well protected against Static Electricity. Also for draining in drums proper earthing facilities should be provided.
 19. All solvents and flammable material storage tanks will be away from the Process plant and required quantity of material should be charge in reactor by Pump or by applying N2 pressure.

20. Temperature indicators are provided near all reactor and distillation systems.
21. All the Plant Personnel shall be provided with Personal Protection Equipment to protect against any adverse health effect during operations, leakage, spillages or splash. PPE like Helmets, Safety Shoes, Safety Glasses, Acid-Alkali Proof Gloves etc. will be provided to the employees. All employees will be given and updated in Safety aspects through periodic training in safety.
22. To make it mandatory to all employees working in the industry to wear PPE's especially persons working in shop floor should not be allowed inside without PPE's
23. Material Safety Data Sheets of Raw Materials & Products will be readily available at the shop floor.
24. PLC base process controls and operation of plant will be installed wherever possible.
25. Solvents will be transferred by pump only in plant area and day tank will be provided. Overflow line will be return to the storage tank or Pump On-Off switch will be provided near day tank in plant.
26. Materials will be stored as per compatibility and separate area for flammable, corrosive and toxic chemical drums in store shall be earmarked.
27. Smoking and other spark, flame generating item will be banned from the Gate.
28. Provision for separate water reservoir of adequate capacity for Fire Hydrant system and provision of separate DG set for emergency power as per TAC guidelines (Tariff advisory committee) sufficient quantity of Foam compound for firefighting during solvent Fire. Sufficient numbers of Fire extinguishers will be installed in plant and storage area as per IS 2190:2010 guidelines.
29. Pipelines and Flexible pipeline (SS 316/MS) are appropriately earthed to avoid accumulation of Static Electricity. Periodic Checkups of the pipelines will be conducted to curb any chances of mishap due to leakages. Preventive Maintenance Schedules will be in practice.
30. Transport Emergency planning and training to driver and cleaner will be provided.
31. On way emergency telephone number list will be provided to transporter.
32. Emergency siren and wind sock will be provided.
33. Onsite emergency plan and off site emergency plan will be prepared by the industries.
34. First Aid Boxes and First Aiders will be made available at site at easily accessible places.

35. Solvents Handling, solvent storage area, distillation unit should be declared as Flame Proof areas having complete Flame Proof fittings to avoid any mishap.
36. To prepare onsite and offsite emergency plans

XI.b *Incase of fire in these type of units, following procedure may be followed*

1. Preferably Switch off the Electrical Supply
2. Isolate all the incoming/outgoing solvent lines valves and switch-off Solvent handling Pumps immediately. Cut off incoming and outgoing from Solvent Recovery to the Plant. Stop Steam Supply to distillation unit and run only Chilled Water for cooling purposes.
3. Call Fire Brigade from nearest Fire station immediately
4. Use chemical/mechanical foam, CO2 and Dry Powder Type Extinguishers to Extinguish the Fire.
5. Remove neighbouring Drums of Solvents away from the Fire incident. In case of fire in the Bulk Storage close the valves of the neighbouring Tanks and use Foam Type Fire Extinguisher.
6. Do not use Water jet directly on the Solvent Fire as Water being heavier goes below the Solvents and Solvent will spill more thereby enhancing the Fire Area.
7. If the Fire breaks out in Solvent Recoveries or Bulk Storage Area, i.e. an open area where a strong breeze may be there diluting the effect of the CO2 to quench the Fire. In such case, use dry Powder Type Extinguishers.
8. In case of any Indoor Fires, use carbon di-oxide with dry Powder and Foam Extinguishers.
9. Isolation of the area and removal of the excess material from the vicinity of the Fire will help to control the Fire at an early stage.

XII Concluding remarks: The committee humbly submits that it is most unfortunate that the accident occurred but the committee has carried out the post-mortem of the accident and has tried to establish the causes of the accident, failures and practically achievable measures to address & resolve these failures. The committee observed that unit is ready to remediate the area and to pay environmental compensation for the damages.

1. An electrical transmission tower or power tower carrying high voltage transmission lines is present adjoining to the unit. During the accident, the power lines were burnt and electricity to the pharmacy was stopped. On 14.07.2020, after the fire subsided the wires were replaced and electricity connection was restored. The transmission tower and lines carry high voltage and induce electric fields. Short circuit may lead to flames or fire. The solvents are inflammable and may catch fire. Ramky pharmacy will use this plot for establishing an industry with low fire hazard potential.
2. No proper safety measures such as auto cut-off system with interlocking to temperature (steam supply) and pressure, no alarm system to alert the staff on critical operational parameters, lack of training to the staff, persons with limited experience and qualification working in the shop floor, improper handling of raw material, citing of the unit near to transmission tower, no separate shed for storing distillation residues, temporary arrangement such as use of hose pipe to transfer solvents, absence of pressure release valves are all the causes for the accident. Because these non-compliances one or the other day will lead to an accident. The immediate trigger to explosion was improper working of vacuum pumps → decrease in vacuum pressure or increase in vacuum in the reactor → increase in vapour pressure leading to static over pressure or internal blast load reaching critical points in the absence of pressure release valves in the reactor → opening of nozzle for sample collection at the same time → expansion reaction appearing like smoke → auto ignition causing fire → fire spreading to reactor causing explosion & rupture of reactor 102 → fire spreading to entire unit and engulfing it.
3. The unit is burnt, the concrete structure housing the production equipment has collapsed. The unit is not in a position to carry out any industrial process in the current situation. The entire unit and its structures has to be re-erected to start the industrial operations. Since this is the scenario, the unit will demolish the remaining portion of the structure, and C& D waste shall be sent to authorized C& D waste recycler. The reactors and other equipment may be reused. The reactors, solvent

storage tanks which are intact shall be shifted jointly by Ramky pharmacy and unit to alternate location found suitable after feasibility study. If the unit intends to re-establish, feasibility study report of the site may be submitted to APPCB for verification.

4. APPCB shall verify the compliance status of all Solvent recovery plant in the state and only those plants complying with standard operating procedure issued by CPCB for operating the SRP and having all necessary clearances shall be permitted to operate. APPCB while issuing CFO & Authorization shall clearly specify the list of solvents that the unit can recover.
5. The unit shall clean-up and restore the area as per the restoration plan suggested by the committee. The restoration plan suggested by the committee such as construction of earthen bunds to prevent runoff from the site, disposal of remaining solvents to TSDF, effluents from tanks to CETP, excavation of 50cm- 100cm topsoil from the unit premises and dispose to TSDF etc shall be complied within a period of May, 2021.
6. If the unit intends to re-establish the solvent recovery plant at an alternate site, feasibility study report of the site may be submitted to APPCB for verification.
7. The committee humbly submits that the industries have to ensure self-compliance and the industry and its personnel are solely responsible for this negligent act which resulted in the accident.
8. The committee humbly submits that the action taken against the industry and levying of EC from the unit will strengthen “Polluter Pay Principle” and will also be a lesson to other industries that they have to ensure self-monitoring, self-compliance and comply with statutory guidelines, safety measures, MOEFCC, CPCB, APPCB, Directorate of Factories etc.
9. The committee humbly submits that the regulatory authorities can not involve & check on the day to day activities of the industries. It shall be the primary

responsibility of the industries to ensure compliance. Self-monitoring and Self Compliance shall be enforced by all the industries. The Regulatory Authorities shall exercise periodic check & review of the industries as per the mandate. The sole responsibility of recruiting competent staff, imparting Industrial, Environmental and Safety training to the staff lies, obtaining necessary clearances, NOC's from various departments lies with the industry. If the Regulatory Authorities learn about the non-compliances of the industries, shall immediately take action against the industry as per prevailing Rules.

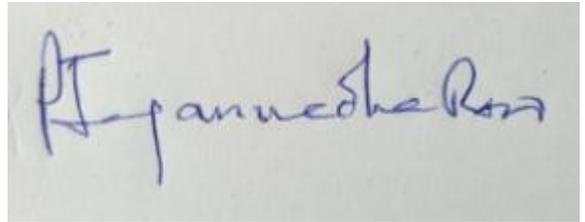
- 10.** The committee humbly submits to Hon'ble NGT that it should uphold the principle of "Polluter Pay Principle". This will lay the foundation for the industries to exercise "Self- Compliance".
- 11.** The State of Andhra Pradesh shall direct the red category industries to carry out safety audit & risk management study and to prepare onsite and offsite emergency plans in compliance with MSIHC Rules, 1989 (Manufacture Storage and Import of Hazardous Substances) so that the possible risks from the industry are identified and appropriate risk mitigation measures and strategies are implemented. Detail management plan needs to be developed for safety measures.
- 12.** The district administration and urban development shall exercise caution and shall not accord permission for construction of residences in the vicinity of large red category industries/ industrial estates/ industrial areas.
- 13.** The compensation amount of Rs. 50.00 lacs per deceased person fixed by the State of Andhra Pradesh (Rs. 35.00 lacs by unit and Rs. 15.00 lacs by state of A.P) is adequate. The unit has paid compensation of Rs.35.00 lakhs each to the dependents of the deceased. M/s Ramky Pharmacy and M/s Visakha Solvents jointly shall pay Environmental Compensation of Rs. 30,01,092/- (Rupees Thirty Lacs One Thousand Ninety Two only) CPCB. Two employees exposed to emissions informed to the committee that they are fine and are not facing any health issues. However, the health conditions of two employees exposed to emissions & solvent

vapours shall be assessed by qualified medical practioner and based on the assessment & recommendations of the medical practioner, District Magistrate may fix the compensation as per Employee Compensation Act, 1923.

14. The measures suggested by the committee to avert such accidents shall be complied by the industries.
15. The committee suggests that in-house comprehensive Environmental Audit should be conducted by the Management of the unit at regular intervals.



T. Rajendra Reddy, JCEE & Zonal Officer,
Andhra Pradesh Pollution Control Board,
Visakhapatnam.



Prof. P. Jagannadha Rao,
Dept. of Chemical Engineering,
Andhra University, Visakhapatnam



Mahima T
Scientist-D
Central Pollution Control Board
Regional Directorate, Chennai

Item No. 01

Court No. 1

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 134/2020

News item published on 13.07.2020 in daily "India Today" titled "Massive fire engulf Vizag chemical plant, explosions heard, injuries reported"

Date of hearing: 23.07.2020

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE S. P. WANGDI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

Respondent(s): Mr. Rajkumar, Advocate for CPCB
Mr. Mahfooz A. Nazki, Advocate for State of Andhra Pradesh
Mr. Ram Shankar, Advocate for R-5
Mr. S. Niranjan Reddy, Advocate for R-6

ORDER

1. Proceedings have been initiated based on media report that massive fire engulfed the chemical plant of **Visakha Solvents Ltd**, Vizag.¹ The report further is that explosion was heard, injuries were reported on 13.07.2020 at Ramky CETP Solvents building in Pharma City.

2. Advance notice was issued by the Registry on 17.07.2020 for today's hearing to the State PCB, CPCB, District Magistrate, Vishakhapatnam, Director Factories and Industrial Safety and Health and Ramky Pharma City (India) Ltd., Parawada Mandal, Vishakhapatnam.

¹ <https://www.indiatoday.in/india/story/massive-fire-vizag-chemical-plant-injured-latest-updates-1700252-2020-07-13>

3. The State PCB has filed its response on 22.07.2020 to the effect that the incident took place on 13.07.2020 at 10:30 P.M at M/s. Visakha Solvents Ltd., Plot No.84A, JN Pharmacy, Parawada, Visakhapatnam in which one person **Sri. K. Srinivas, aged 45, Junior Operator died** and Sri. T. Malleswararao, aged 33, Senior Operator was injured due to fire accident that took place. 7 Nos. of fire tenders from A.P. State Disaster Response & Fire Services (APSDRFS) & 4 Nos. of fire tenders from neighbouring industries were in action and as per the information given by APSDRFS, the fire was under control by 5.00 A.M on 14.07.2020. It was observed that DMSO storage tanks, Day tanks, Storage tanks, Reactors, Receivers and some of the structures/buildings/sheds, Plant & Machinery etc., were extensively damaged. The consent and EC were granted to the unit in the year 2005 which was renewed in the year 2018 for additional capacity. The APPCB issued amendment for change of name vide order dated 18.09.2010 by stipulating condition that M/s. **Ramky Pharmacy shall have the overall responsibility for operation and maintenance of solvent recovery unit along with other infrastructure facilities. In any case, M/s. Ramky Pharmacy (I) Pvt. Ltd., would stand to continue answerable for environmental impacts/damage caused due to the operation of solvent recovery unit.** Copy of the amendment order is enclosed. **(Annexure III)**. The industry is a standalone solvent recovery unit **to produce Recovered Solvents and Distilled Solvents/Paint Thinner from Spent solvents/Mixed solvents procured from various bulk drug industries.** The industry is engaged in processing of spent solvents listed in 20.2, 21.2, 26.4 & 28.6 of schedule-I of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016. The industry

installed and is operating packed column for recovery of solvents. The industry is having 5 Nos. of distillation Columns.

4. It is further stated that after the incident, a five member committee was constituted by the District Collector, Vishakhapatnam to enquire into the reasons of the incident. The Committee submitted preliminary investigation report with the following observations:

“

1. *The desirable vacuum to be created in the reactor for operation is in the range of 600 to 650mm of Hg, but the vacuum pressure observed that 350mm of Hg at 9.00pm by the both shift chemists.*
2. *The temperature also observed 950 c which is increased from 750c.*
3. *The process parameter of DMSO, Toluene, Methanol and Acetone also varied accordingly with respect to prevailed vacuum and temperatures. With increase in intensity of vacuum the boiling point of the above chemicals mixture obviously decreased;*
4. ***Due to the reduction of the boiling point of the mixture, and may be reached to the Flash points of the above chemical mixture, may be got flashed subsequently increased the pressure followed by rupture of SSR 102 reactor.***
5. *In the initial rescue operations by the management despite many actions could not find K. Srinivasa Rao. Subsequently after searching at accident site he found dead.”*

5. The State of Andhra Pradesh has also filed a further report dated 22.07.2020 by the same committee. The relevant extracts from the report are:

“7. Probable Causes of Accident:

The following three probable causes of the Accident

- *Ingress of air while taking the samples from the sampling collection valve.*

While taking the sample from the sampling condenser or sampling valve, the air(static charged)

might ingress in to the system disturbing liquid vapor equilibrium present in the reaction vessel/ distillation vessel by acting as source of ignition and that might have ignited resulting in over pressuring the reactor subsequently it got exploded as the azeotropic mixture in the reactor might have reached to a boiling point got decomposed and thermal runaway took place. The Non availability or inefficient working of pressure releasing valves and rupture discs on the reactor and distillation column might have adds its contribution by not releasing the pressure above the set point limits.

*On analyzing of the M/s. Visakha solvents limited it can be safely assumed that there is two condenser system with single valve sample collection system issued for observation and sampling the material. **The management has provided single valve collection system instead of double valve arrangement which promotes the air ingress in to the reactor and column. Hence the probability of air ingress is arises.***

- *The second probability is most likely might lead to the accident. **The vacuum pump might have stopped working due to either power failure or mechanical problem.** The steam heating would have continued leading to rising of temperature of reaction mass /distillation material. These finally resulted in to decomposition of material and eventually undergo a thermal runaway. The reactor got exploded, the material caught fire and finally engulfed entire plant and facilities.*
- *The third probability is that **process contamination by presence of some unknown incompatible elements to DMSO might have took place in the reactor SSR 102 which triggered the decomposition of DMSO and subsequently lead to built up of pressure inside the reactor and explosion.** The sources of contamination may be some left over residues in the reactor from previous batches or continuing distillation process without draining the residues on batch wise.*

8. Deviations and Observations noted:-

The following are observations found during investigation:

- a) *The DMSO with the mixed chemicals i.e. 1.32% Methanol, 0.84% Acetone, 0.44% Toluene, 0.30% Moisture Content and 0.20% Impurities (Unknown) is distilled under Vacuum; and Vacuum applied before separation of low Boiling Temperature chemicals.*
- b) ***The HARA and HAZOP studies are not conducted for DMSO (1.32% Methanol, 0.84% Acetone, 0.44% Toluene, 0.30% Moisture Content and 0.20% Impurities) and compliance report on recommendations are not submitted to this office.***
- c) ***The competent Supervisors who are supervising the handling of chemicals are not appointed as per requirements under Section 41-C Rule 61-I & Rule, 95 Sch-XV of AP Factories Rules 1950.***
- d) ***Testing and certification of stability of plant and buildings is not done after expansion vide Lr No D.Dis./A1/VSP-II/4280/18, dated: 02.08.2018 and it is not submitted to this office.***
- e) *Interlocking of the process parameters like Pressures, Temperatures and Vacuum in case of Vacuum distillation is not provided; to auto cut off of steam and flooding of coolant into the jacket.*
- f) ***The Jr. Operator allowed to operate valves for taking samples, having 10th standard qualification only.***
- g) ***The Sr. Operator working as shift in charge on 13.07.2020 in night shift having qualifications of ITI only.***
- h) ***All the tank farm and drums stored in and around the production block are burnt out.***
- i) ***3 reactors in first floor of the production block are completely damaged and one tanker, one car and 2 motor cycles are also burnt out.***

9. Suggested remedies to avert such accidents in future

- a) *All the distillation units should install two condenser system or double valve system for taking samples during the process.*
- b) *All the equipment and pumps shall be kept on auto mode with back up of generator power supply. The generator also to be kept on auto mode in case of power failure.*
- c) *There should be interlocking arrangement to cut off steam supply in case the temperature reaches above critical levels.*
- d) *There should be automatic cooling arrangement/ coolant circulation in the jacket after cutting off steam supply to bring the distilling mass to desired level.*
- e) *A suitable designed pressure relief valve and rupture disc as per ASME Standard with differential actuation should be provided to all the reactors.*
- f) *The vents from the Safety Relief Valve and rupture disk should be terminated in to adequately sized (not less than reactor volume) dump tank through suitable size pipeline.*
- g) *The dump tank shall be kept on water seal and provided with a vent with flame arrestor.*
- h) *Vacuum breaking with Inert gas purging shall be provided on all reactors as well as distillation columns.*
- i) *Effective measures shall be taken to prevent the statics charge generation while taking the Samples.*
- j) *Ensure and take into records of the details of reactor cleaning after the every batch process completes and also before commencing the next batch charging.*
- k) *The factory management shall ensure qualified operators and supervisors in all the shifts to monitor safety as per norms.*

10. Present status:

- a) *Prohibitory orders were already issued to the management vide Lr. A.No.245944/2020, Dated: 16.07.2020 by I/c Deputy Chief Inspector of Factories, Visakhapatnam and **necessary legal action shall be initiated by issuing prosecution notice along with the inspection orders reflecting the failures and there after proceeding legally through court of law.** The copy is enclosed.(Annexure-IV).*

- b) APPCB issued **stop production order on 14.07.2020 by withdrew of CFO & HWA orders**. The copy is enclosed. (Annexure-V).”
- c) APPCB issued show cause notice dated: 22.07.2020 imposing **interim environmental compensation of INR 1.0 Crore to M/s. Visakha Solvents**. The copy is enclosed.(Annexure-VI).

6. After the said report, the State PCB took action to monitor the air quality, TVOC emissions, and installation of CAAQMS stations. Water quality was also monitored and following regulatory action was taken:

“

- i. The industry was issued with stop production order on 14.07.2020 by withdrew of CFO & HWA orders. The copy is enclosed (**Annexure-X**)
- ii. Show cause notice dated: 22.07.2020 was issued to M/s. Visakha Solvents for levy of interim environmental compensation of INR 1.0 Crore. The copy is enclosed (**Annexure- XI**).”

7. Response has also been filed by the CPCB *inter alia* stating as follows:

*“It seems from the available information, the accident happened mainly **due to failure to comply with safety guidelines and practices by the unit and its operators**. The officials of Andhra Pradesh Pollution Control Board visited the site on 13.07.2020 at 11:45PM and have monitored VOC’s & CO. The monitoring results are awaited. As per the information gathered, the entire process related equipment have burnt out and relevant documents are burnt and the unit may not be able to process any solvents. Considering the area is highly sensitive and dominated by pharma industries there is likelihood of generation of spent solvents in huge quantities. In absence of recovery facility those industries who used to give solvents to M/s Visakha solvents shall chalk out alternate method in consultation with APPCB.*

Action Taken by CPCB

- 1) CPCB had issued an advisory to all SPCBs on 08.05.2020 that SPCBs/PCCs shall ensure that pollution control equipment, connectivity of OCEMS with CPCB/SPCB servers, effluent treatment plants including safety equipment and its machineries shall be kept in good operable conditions before resuming operation. The SPCBs/PCCs shall ensure that all the units shall

take utmost care in handling hazardous chemical by using trained manpower. The SPCBs/PCCs shall closely monitor the situation and ensure that the environmental norms are not violated by any unit.

- 2) However, **accidents involving chemical spillage, release of gases, fire, etc. have been reported in the recent past in industrial units.** Another communication was sent on June 30,2020 to all SPCBs/PCCs that industries will take adequate measures to prevent accidents and comply with all the provisions of E(P) Act,1986, Air Act,1981 and Water Act,1974. In case of accidents releasing pollutants in the environment, SPCBs/PCCs shall monitor environmental quality for relevant parameters & assess environmental impacts and damage. They shall also recover environmental compensation towards damage and restoration.

Follow-up action desired:

APPCB shall be directed for following;

- To request Hon'ble NGT to **direct Department of Industries and Commerce and Chief Inspectorate of Factories to ascertain safety of installations and carry out safety audit and verify onsite and offsite emergency plans.**
- To direct the unit to furnish information on the type & quantity of solvents stored and **safety measures available at time of accident along with details on fire hydrant system and sprinkler system and their status.**
- To direct the industries to give adequate training to the staff on environment health and safety. In addition Government of Andhra Pradesh shall also undertake awareness programmes on safety & environment vigorously since many accidents are reported within three months.
- **To close down the unit till further orders.**
- To levy Environmental compensation from the unit for failure to comply with operational safety practices.
- To devise alternative method to dispose solvents generated from the industries those who were sending spent solvents to Visakha solvents as immediate measure.
- To cross-verify the capacities & safety of facilities available in the vicinity who can handle the spent solvents since there will be generation of spent solvents as pharma industries continue to operate.
- To direct all industries & facilities to carry out third party safety audit.”

8. From the material referred to above, it is *prima facie* clear that the accident happened due to failure to comply with the safety guidelines and practices by the unit and its operators. It is not clear whether the on-site and off-site emergency plans required to be prepared under Rules 13&14 of the **Manufacture, Storage and Import of Hazardous Chemical Rules, 1989** (The 1989 Rules) and compliance of requirement of mock drills etc. have been looked into and whether any action has been taken for non-compliance of the said statutory requirements.

9. We have come across several incidents in recent past (within last three months) resulting in deaths of and injuries to human beings and damage to the environment on account of failure of compliance of the statutory provisions including the on-site and off-site emergency plans and also other safety measures. Deficiency in compliance of Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996 (The 1996 Rules) and failure of the State Chief Inspector of Factories (CIFs) under the Factories Act, 1948 to oversee the safety issues have also been observed. There is further failure in due compliance of provisions relating to requirement of approval of site by the Petroleum and Explosives Safety Organization (PESO). The safety requirements are also to be overseen in the process of grant of EC under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981. There appear to be lapses in that regard also. Under the 1989 Rules (Rules 2 (b) and 3) read with Schedule V, responsibilities are also assigned on the CPCB and the State PCB as specified therein.

10. Reference may be made to following specific incidents dealt with by this Tribunal recently:

- i. Order dated 01.06.2020, relating to incident of gas leak dated 07.05.2020 in **LG Polymers India Pvt. Limited** at Vishakhapatnam, resulting in death of 11 persons and injuries to more than 100, apart from other damage;
- ii. Order dated 08.06.2020, relating to incident dated 03.06.2020 in a chemical factory, **Yashyashvi Rasayan Pvt. Ltd.** at Dahej, District Bharuch, Gujarat resulting in deaths and injuries and other damage;
- iii. Order dated 06.07.2020, relating to incident dated 30.06.2020 on account of gas leakage at **Sainor Life Sciences** factory at Parawada in industrial area on the outskirts of Vishakhapatnam;
- iv. Order dated 08.07.2020, dealing with the incident dated 01.07.2020 resulting in death of 6 person and injury to 17 due to blast of boiler in **M/s Neyveli Thermal Power Station** (NLCIL), Cuddalore and;
- v. Order dated 02.07.2020, in relation to incident of **oil well blow out on 27.05.2020 at Baghjan in the Tinsukia District of Assam** resulting in deaths, injuries and damage to the environment.

11. The Tribunal directed constitution of independent expert Committees to find out **sequence of events, causes of failure, authorities responsible and extent of damage to human life and environment, steps taken for compensating the victims and for restoration of the environment, measures to prevent recurrence and**

other incidental issues. After considering the reports received, the Tribunal **directed quantification of final compensation and preparation of restoration plan. The Chief Secretaries of the concerned States were required to take action against persons responsible for the incidents. The MoEF&CC was required to constitute an expert Committee to suggest ways and means to revamp monitoring mechanism.** The orders were passed without prejudice to criminal or other statutory proceedings as per law. The matters are now fixed for hearing on 03.11.2020.

12. On the pattern of the earlier proceedings, we direct constitution of a joint committee comprising CPCB, State PCB and Prof. P Jagannadha Rao, Dept. of Chemical Engineering, Andhra University, Vishakhapatnam to ascertain facts, determine responsibility, assess the final compensation for the victims and the environment, to prepare plan restoration of the environment, suggest precautions for future. The Committee may visit the site, consider the view point of all the stakeholders and give its report within three months by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF. CPCB will be the nodal agency for compliance. The District Magistrate will extend necessary cooperation and facilitate functioning of the Committee. The Chief Secretary, Andhra Pradesh may identify and take action against persons responsible for failure in overseeing the execution of on-site and off-site emergency plans and holding of mock drills as per statutory requirement. The MoEF&CC may look into this incident also while furnishing its report in *O.A No. 73/2020, In re: Gas Leak at LG Polymers Chemicals Plant in RR Venkatapuram Village, Visakhapatnam in Andhra Pradesh.*

13. We are informed that the heirs of the deceased have been paid a sum of Rs. 35 lakhs by the company and Rs. 15 lakhs will be paid by the State. A sum of Rs. 20 lakhs will be paid to the injured. The compensation will be treated as interim subject to determination of final liability. Suitable interim steps may be taken for restoration of the environment, pending preparation of final restoration plan.

14. Apart from the report of the Committee, action taken reports may be filed by the Chief Secretary, Andhra Pradesh, State PCB, CPCB, District Magistrate, Vishakhapatnam and MoEF&CC before the next date by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF.

15. In view of the repeated failures of compliance of safety norms, there is need for preventive action to avoid any such incidents for which the Chief Secretaries of the all the States may hold meetings with concerned officers and stakeholders within two weeks from today to take stock of the situation and issue such directions as may be found necessary. The preventive action may also include mock-drills as statutory requirement to be performed under the 1989 Rules.

A copy of this order be forwarded to Prof. P. Jagannadha Rao, Dept. of Chemical Engineering, Andhra University, Vishakhapatnam, District Magistrate, Vishakhapatnam, CPCB, M/s Visakha Solvents Ltd., Chief Secretaries of all States/UTs, and all State PCBs/PCCs by email for compliance.

List for further consideration on 03.11.2020.

Adarsh Kumar Goel, CP

S. P. Wangdi, JM

Dr. Nagin Nanda, EM

July 23, 2020
Original Application No. 134/2020
AK

To,
The Honorable Members,
Joint Monitoring Committee,
National Green Tribunal.

Dear Sir/Madam,

Sub:- Details of Materials Lost in the Fire Accident on 13/07/2020.

S.No	Name of the Solvent	Quantity in KL
Stocks before the fire accident		
1	Tol+MEOH (75 % MEOH +25 % TOL)	119
2	Mixed Solvents (70 % of MEOH)	83
3	DMSO	16.9
4	MDC	9.4
5	IPA + Water (86% Water + 14%Water)	31
6	Acetone	44
	Total	303.3
Lost material in the fire Accident		
1	DMSO	10
2	MDC	6
3	Tol+MEOH	50
4	Acetone	24
5	Mixed Solvents	45
6	IPA	26
	Total	161

Yours Faithfully,

For Visakha Solvents Limited.

B. Venkatesh Reddy
Authorised Signatory



Corp off: 6-3-1089/G13, Ramky Grandiose, Ramky Towers, Gachi Bowli, Hyderabad, Telangana - 500032.

To,
The Honorable Members,
Joint Monitoring Committee,
National Green Tribunal.

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For Visakha Solvents Limited.

B. Venkatesh Reddy
Authorised Signatory



Corp off: 6-3-1089/G13, Ramky Grandiose, Ramky Towers, Gachi Bowli, Hyderabad, Telangana - 500032.



**ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL OFFICE: VISAKHAPATNAM**

Dr. Madhava Sudhana Rao, M.E., LL.B.,
Joint Chief Environmental Engineer

39-33-20/4/1,
Madhavadhara Vuda Colony, Visakhapatnam
Phone: 2719480, Fax: 2719380
Email: vsp.zo.jcee@pcb.ap.gov.in

BY REGISTERED POST WITH ACKNOWLEDGMENT DUE

CONSENT AND HAZARDOUS WASTE AUTHORIZATION ORDER

Consent Order No: 7736-VSP/APPCB/ZO-VSP/CFO/2015-373

Date: 06.06.2015

(Consent Order for Existing/New or altered discharge of sewage and/or trade effluents/outlet under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and amendments thereof and Operation of the plant under section 21 of Air (Prevention & Control of Pollution) Act, 1981 and amendments thereof) and Authorization / Renewal of Authorization under Rule 5 of the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.

CONSENT is hereby granted under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of Air (Prevention & Control of Pollution) Act 1981 and Authorization under the provisions of HW (M&H) Rules (hereinafter referred to as 'the Acts', 'the Rules') and the rules and orders made thereunder to

**M/s. Visakha Solvents Ltd.,
Plot No.84 A, Jawaharlal Nehru Pharma City,
Parawada,
Visakhapatnam District**

(hereinafter referred to as 'the Applicant') authorizing to operate the industrial plant, to discharge the effluents from the outlets and the quantity of Emissions per hour from the chimneys as detailed below.

i) Outlets for discharge of effluents:

Outlet No.	Outlet Description	Max Daily Discharge	Point of Disposal	Limiting Standards
1	Trade effluents: Process water - 2 TPD Washings - 2 TPD Boiler feed - 1 KLD Cooling towers - 2 KLD DM plant - 1 KLD	8 KLD	Shall be sent to CETP of pharmacy	pH - 6.50-8.50 Temperature °C - Ambient TDS - 12,000 mg/l TSS - 600 mg/l BOD - 3,000 mg/l COD - 8,000 mg/l Oil and Grease - 20 mg/l Chromium Hexavalent (as Cr+6) - 2 mg/l Chromium (total) (as Cr) - 2 mg/l Ammonical Nitrogen (as N) - 30 mg/l Cynide (as CN) - 0.20 mg/l Lead (as Pb) - 1 mg/l Nickel (as Ni) - 3 mg/l Zinc (as Zn) - 15 mg/l Arsenic (as As) - 0.20 mg/l Mercury (as Hg) - 0.01 mg/l
2	Domestic Effluents	8 KLD		

(*The industry shall segregate the HTDS and LTDS effluent streams and the effluents which are not meeting the above standards shall be treated as HTDS effluents and shall be sent to CETP of Pharmacy)

ii) Emissions from chimneys:

Chimney No.	Description of Chimney	Quantity of Emissions at peak flow	Emission Standards

iii) Hazardous Waste Authorization: Form – II [See Rule 5(4)]

1. No. of Authorization and date of issue : 7736-VSP/PCB/ZO-VSP/HWM/2015- 373
Date: 06.06.2015

2. M/s. Visakha Solvents Ltd., Plot No.84 A, Jawaharlal Nehru Pharma City, Parawada, Visakhapatnam District is hereby granted an authorization to operate a facility for collection, reception, storage, transport and disposal of hazardous wastes namely :

Hazardous Waste with Recycling Option:

Sl. No	Solid Waste generated from	Quantity	Hazardous / as defined under HWM Rules, 1989.	Method of Disposal
1)	Process residue (distillation residue)	1000 Kgs/day	28.5 of Schedule-I	TSDF, Parawada, Visakhapatnam for incineration

This order is subject to the provisions of 'the Acts' and 'the Rules' and orders made thereunder and further subject to the terms and conditions incorporated in this order.

This consent order is valid for manufacture the following products along with quantities only.

S.No.	Products	Capacity
1.	Recovered Solvents from spent solvents / mixed solvents	25 KLD

This combined order of Consent & Hazardous Waste Authorization shall be valid for a period ending with the 31st July 2018.

Encl: Schedules A, B & C

To
M/s. Visakha Solvents Ltd.,
Plot No.84 A, Jawaharlal Nehru Pharma City,
Parawada,
Visakhapatnam – 531 021
Email: visakhasolvents@gmail.com


JOINT CHIEF ENVIRONMENTAL ENGINEER
 Joint Chief Environmental Engineer,
 A.P. POLLUTION CONTROL BOARD
 ZONAL OFFICE
 VISAKHAPATNAM

Copy submitted to the Member Secretary, APPCB, Hyderabad for favour of kind information.
Copy submitted to the CEE, APPCB, Hyderabad for favour of kind information.
Copy to JCEE (UH-4), APPCB, Board Office, Hyderabad for information.
Copy to JCEE (CESS), APPCB, Board Office, Hyderabad for information.
Copy to Environmental Engineer, APPCB, Regional Office, Visakhapatnam for information.

SCHEDULE - A

1. The applicant shall make applications for renewal of consent (under Water and Air Acts) and Authorization under HWM Rules **atleast 120 days before the date of expiry of this order**, along with prescribed fee under Water and Air Acts for obtaining consent of the Board **along with detailed compliance to the conditions stipulated in the CFO.**
2. The industry shall immediately submit the revised application for consent to this Board in the event of any change in the raw material used, processes employed, quantity of trade effluents & quantity of emissions etc.
 - a) All the fugitive emissions shall be controlled with proper measures.
 - b) The applicant shall also install the equipment such as wind speed recorder and wind direction recorder.
3. The applicant shall not change or alter either the quality or the quantity or the rate of the discharge or the route of discharge and shall not change or alter either the prescribed quality or the rate of emission without the previous written permission of the Board.
4. The applicant shall, not later than 30 days from the date of issue of this consent order, certify in writing to the Board that the applicant has installed or provided for an alternative electric power source sufficient to operate all facilities installed by the applicant, to comply with the terms and conditions of this consent. In absence of alternative electric power source sufficient to operate all facilities installed by the applicant, to comply with the terms and conditions of this consent, production shall be stopped.
5. Any up-set condition in any plant/plants of the industry, which result in, increased effluent discharge and/ or violation of standards stipulated in this order **or** the emission of any Air Pollutant into the environment in excess of the standards laid down by the Board, occurs or is apprehended to occur due to accident, or other unforeseen act or event, the person-in-charge of the premises, from where such discharge / emission occurs or is apprehended to occur shall forthwith intimate the fact of such occurrence or the apprehension of such occurrence to this Board, by fax / email under intimation to the Collector and District Magistrate.
6. In case of such episodal discharges / emissions mentioned in item 6 above, the industry should take immediate action to bring down the discharge / emission below the limits prescribed in this order.
7. A good house keeping shall be maintained both within the factory and in the premises. All hoods, pipes, valves, sewers and drains shall be leak proof. Floor washings shall be admitted into the effluent collection system only and shall not be allowed to find their way into storm drains or open areas.
 - i. The industry shall carryout analysis of waste water discharges or emissions through chimneys, for the parameters mentioned in Schedule - B of this order at regular intervals.
 - ii. The industry shall maintain following records to accessible to the Board, whenever required.
 1. Analysis reports of waste water/ emissions.
 2. Log book for operation of pollution control systems.
 3. Inspection book
8. The applicant shall set up THREE Ambient Air Quality Monitoring Stations for continuous recording of relevant critical parameters mentioned in Schedule - B as per the CPCB guidelines and submit monthly reports.
9. Separate power connection with energy meter shall be provided for the Pollution Control Equipment and record of power consumption and chemicals consumption for the operation of pollution control equipment shall be maintained separately.
10. The applicant shall submit Environment statement in Form V before 30th September every year as per Rule No.14 of E (P) Rules, 1986 & its amendments thereof.
11. The applicant shall comply with the directives/orders issued by the Board in this consent order and at all subsequent times without any negligence on his part. The applicant shall be liable for such legal action against him as per provisions of the Law/Act in case if non-compliance of any order/directive issued at any time and/or violation of the terms and conditions of this consent order.
12. The applicant shall furnish to the visiting officer and / or the Board any information regarding the construction, installation or operation of the effluent treatment system/ air pollution control equipment and such other particulars as may be pertinent for preventing and controlling pollution.
13. The industry is liable to pay compensation for any environmental damage caused by it, as fixed by the Collector and District Magistrate as Civil liability.

14. All the rules & regulations notified by Ministry of Environment and Forests, Government of India in respect of management, handling, transportation and storage of hazardous chemicals and wastes shall be followed.
15. All the rules & regulations notified by Ministry of Law and Justice, Government of India regarding Public Liability Insurance Act, 1991 shall be followed.
16. The occupier shall educate the workers and nearby public of possible accidents and remedial measures.
17. For any accident or spillage of hazardous wastes causing damage to the Environment, the occupier or the transporter as the case shall be held responsible.
18. In case of closure of industry, the un-used/not consumed raw materials falling under the category of Hazardous Chemicals and mentioned in Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 and Amendment Rules, 2003 shall be removed and sold to other units within 90 days from the date of closure to prevent any possibility of occurrence of an accident. In case the above hazardous chemicals have lost their properties originally acquired, then they shall be treated as Hazardous Waste and they should be disposed off only to the authorized agencies of APPCB in a safe manner.
19. The occupier shall prepare / update an emergency preparedness plan for safe handling of hazardous waste from time to time and submit the same to APPCB. Emergency preparedness plan must be implemented immediately whenever there is fire, explosion or release of hazardous waste or hazardous waste constituents, which could endanger to human health or environment.
20. Packaging, labeling and transportation of Hazardous Wastes shall be in accordance with the provisions of the rules issued by the Central Govt. under the Motor Vehicles Act, 1988 and other guidelines issued from time to time. The packaging and labeling shall be based on the composition and hazardous constituent of the waste, however all Hazardous Waste containers should be provided with a general label.
21. The driver who transports Hazardous Waste should be well acquainted about the procedure to be followed in case of an emergency during transit. The transporter shall carry a Transport Emergency (TREM) card (as given in the guidelines for management and handling of hazardous wastes) duly filled by the Hazardous Waste generator.
22. Containers / Container Liners of Hazardous Chemicals and Hazardous Wastes should be thoroughly detoxified before selling to agencies authorized by APPCB. Proper records, specific to each Hazardous Chemical / Hazardous Waste Containers / container Liners should be maintained in the following way:
 - i . Number of containers received.
 - ii . Date and method of detoxification.
 - iii . Name of agencies to whom containers were sold with quantities.
 - iv . Transportation particulars.
23. No Hazardous Wastes shall be mixed with any other waste or shall be discharged to a common, other internal, external sewerage or other drainage system without prior approval of APPCB.
24. If HDPE bags are used for storing Hazardous Wastes, it should be ensured that they are perfectly sealed mechanically or double hot sealed. If MS / HDPE bags or drums are used for Hazardous Wastes, these drums / bags should be ensured that they are perfectly sealed.
25. The person authorized shall not rent, lend, sell, transfer their industrial premises without obtaining prior permission of State Pollution Control Board.
26. Any Unauthorized change in personnel, equipment and working condition as mentioned in the application by the person authorized shall constitute a breach of this authorization.
27. The industry shall comply with the provisions of Batteries (Management and Handling) Rules, 2001.
28. The applicant shall put up two black boards of size 6 ft by 4 ft. at the main entrance to their plant. One board shall contain the specific CFE and CFO conditions, in sufficiently large font size so that it can be read easily from a distance of 10 ft to a normal eye, and other board shall carry, again in sufficiently large font size so as to be able to read from a distance of 10 ft, the latest Water, Air, Noise and solid waste monitoring data as well as the maximum vulnerable zone.
29. The applicant shall exhibit the Consent & HW Authorization order of the Board in the factory premises at a prominent place for the information of the inspecting officers of the different departments.
30. Notwithstanding anything contained in this conditional letter or consent, the Board hereby reserves to it the right and powers under Section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 and its amendments thereof and under Section 21 of the Air (Prevention

& Control of Pollution) Act, 1981 and its amendments thereof to review any and/or all the conditions imposed herein above and to make such variations as deemed fit for the purpose of the Acts by the Board.

31. The authorization issued under Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, shall comply with the provision of the Environment (Protection) act, 1986.
32. Any person aggrieved by an order made by the State Board under Section 25, Section 26, Section 27 of Water Act, 1974 or Section 21 of Air Act, 1981 may within thirty days from the date on which the order is communicated to him, prefer an appeal as per Andhra Pradesh Water rules, 1976 and Air Rules 1982, to such authority (herein after referred to as the Appellate Authority) constituted under Section 28 of the Water (prevention and Control of Pollution) Act, 1974 and Section 31 of the Air (Prevention and Control of Pollution) Act, 1981.

SCHEDULE - B

1. The industry shall take steps to reduce water consumption to the extent possible and consumption shall NOT exceed the quantities mentioned below

S. No.	Consumption	Quantity
1.	Process water	2 KLD
2.	Washings	2 KLD
3.	Boiler feed	15 KLD
4.	Cooling towers	15 KLD
5.	DM Plant	2 KLD
6.	Domestic	1 KLD
7.	Green Belt	2 KLD
	Total	39 KLD

2. The industry shall file the water Cess returns in Form-I as required under section (5) of Water (Prevention and Control of Pollution) Cess Act, 1977 on or before the 5th of every calendar month, showing the quantity of water consumed in the previous month along with water meter readings. The industry shall remit water Cess as per the assessment orders as and when issued by Board.
3. The industry should comply with the National ambient air quality standards as per MoEF, GoI notification dated. 18.11.2009 along the premises of the factory as prescribed below.

S. No.	Parameters	Standards in $\mu\text{g}/\text{m}^3$
1	Particulate Matter(PM_{10})	100
2	Particulate Matter ($\text{PM}_{2.5}$)	60
3	SO_2	80
4	NO_x	80

Noise Levels: Day time (6 AM to 10 PM) - 75 dB (A)

Night time (10 PM to 6 AM) - 70 dB (A).

4. The industry shall comply with all the Rules and Regulations specified in Water (P&C of P) Act, 1974, Air (P&C of P) Act, 1981 and Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 and their amendments issued thereof.
5. The industry should not increase the capacity beyond the permitted capacity mentioned in this order, without obtaining CFE/CFO of the Board.
6. The industry shall provide dedicated pipelines for disposal of HTDS & LTDS effluents despite sending the HTDS & LTDS effluents through tankers to CETP.
7. The effluent collection tank shall be impervious and above ground level to prevent ground water pollution.
8. The industry shall not discharge any wastewater outside the industry premises under any circumstances.
9. The industry shall install flow meters and maintain daily record for quantifying solvents processed, recovered and residue generated.
10. The industry shall maintain records on source of solvents and the consolidated records shall be submitted to concerned Regional Office for every month along with invoice copies of the spent solvents received for recovery.
11. Sale details of the distilled solvent shall also be submitted to the A.P. Pollution Control Board regularly on a monthly basis.

12. The industry shall not carry out the trading activity of the spent solvents.
13. The industry shall take the following measures to prevent solvent losses:
 - i. Solvent handling pump shall have mechanical seals to prevent leakages.
 - ii. The condensers shall be provided with sufficient HTA and residence time so as to achieve more than 95% recovery.
 - iii. Solvent shall be stored in a separate space specified with all safety measures.
 - iv. Entire plant shall be flame proof. The solvent storage tanks shall be provided with breather valve to prevent losses.
14. The solvent drums shall be kept on concrete platform only with covered roof. The platform shall be provided with sufficient dyke wall with leachate collection system.
15. The industry shall maintain records on characteristics of crude ML's & quantity of recovered solvents. The consolidated records shall be furnished to RU-I, Visakhapatnam for every three months.
16. Proper earthing shall be provided in all the electrical equipment wherever solvent handling is done.
17. All the solvent storage tanks shall be provided with vent condensers to prevent solvent vapour.
18. Transfer of solvents shall be done by using pumps only instead of manual handling.
19. The industry shall take action to reduce the fugitive emissions as far as possible. All venting requirement shall have vapour recovery system.
20. The industry shall take proper measures for controlling odour pollution within and around the factory premises.
21. The industry shall monitor VOC and shall maintain register to record VOC readings.
22. The industry shall store the chemical drums under the shed.
23. The industry shall maintain proper records for Hazardous Waste stated in Authorization in Form-3 i.e., Quantity of incinerable waste, land disposal waste, recyclable waste etc., and file annual returns in Form-4 as per Rule 22(2) of the Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008 and amendments thereof.
24. Under no circumstances, the Hazardous Waste shall be burnt in the boiler.
25. The industry shall dispose the inorganic hazardous waste to TSDF for land fill and organic residue to TSDF for incineration / cement plants for co-processing.
26. The following rules and regulations notified by the MOE&F, GOI shall be implemented.
 - a) Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989.
 - b) Hazardous waste (Management, Handling and Transboundary), Rules, 2008.
 - c) Batteries (Management & Handling) Rules, 2010, Dt.4.5.2010.
 - d) E- waste (Management & Handling) Rules, 2011.
27. The industry shall ensure that there shall not be any change in the process technology, source of raw material and scope of working without prior approval from the Board.
28. The industry shall not carry out any other activity except for the recovery of spent solvents as submitted in CFO.
29. The industry shall maintain good housekeeping within the plant premises.
30. The industry shall comply with the conditions of undertaking given to APPCB vide undertaking dated 23.10.2010.
31. The industry shall submit environment statement in Form-V before 30th September every year as per Rule No.14 of E(P) Rules, 1986 and amendments.
32. The industry shall develop 33% of the total area as thick green belt all along the boundary of the unit and also in the vacant places with all tall growing trees with wide leaf area.
33. The industry shall comply with all the directions issued by the Board from time to time.
34. Concealing the factual data or submission of false information / fabricated data and failure to comply with any of the conditions mentioned in this order may result in withdrawal of this order and attract action under the provisions of relevant pollution control Acts.
35. The Board reserves its right to modify above conditions or stipulate any further conditions in the interest of environment protection.

SCHEDULE - C

(See Rule 5(4))

(Conditions of Authorization for occupier or operator handling hazardous wastes)

1. The industry shall give top priority for waste minimization and cleaner production practices.
2. The industry shall not dispose waste oils to the traders and the same shall dispose to authorized Re-processors / Recyclers. They shall verify the authorization of the Board given to the party before disposing their wastes to the external party.

3. The industry shall take all practical steps to avoid any spillage of effluents, waste oil hazardous chemicals & hazardous wastes on land.
4. The industry shall store the hazardous waste on a raised platform under a shed till it is disposed.
5. The industry shall not store the hazardous waste in their premises for more than 90 days from the date of generation, as per the Hazardous Waste (Management & Handling) Rules, 2003 and its amendments thereof.
6. The industry shall dispose of e-waste to the authorized recyclers only.
7. Industry shall maintain 6 copy manifest system for transportation of waste generated and a copy shall be submitted to Zonal Office, Visakhapatnam and concerned Regional Office.
8. The industry shall maintain the records of the Hazardous Waste in Form -III as per Rule 22 (1) of Hazardous Waste (Management & Handling) Rules, 1989 as amended, to the Board.
9. The industry shall file annual returns in Form-IV as per Rule 9(2) of the Hazardous Waste (Management & Handling) Rules, 1989 as amended to the Board.
10. The Industry shall submit the condition wise compliance report of the conditions stipulated in Schedule B and Schedule-C of this order half yearly basis to Zonal Office, Visakhapatnam and Regional Office, Visakhapatnam.

To
M/s. Visakha Solvents Ltd.,
Plot No.84 A, Jawaharlal Nehru Pharma City,
Parawada,
Visakhapatnam District

B. 
JOINT CHIEF ENVIRONMENTAL ENGINEER
Joint Chief Environmental Engineer
A.P. POLLUTION CONTROL BOARD
ZONAL OFFICE
VISAKHAPATNAM



ANDHRA PRADESH POLLUTION CONTROL BOARD
D.No.33-26-14D/2, Near Sunrise Hospital, Pushpa Hotel Centre,
Chalamalavari Street, Kasturibaipet, Vijayawada - 520 010
Phone. No.0866-2463200, Website : www.appcb.ap.nic.in

Member Secretary

RED CATEGORY
CONSENT & AUTHORISATION ORDER

Consent Order No : APPCB/VSP/VSP/3/CFO/HO/2018-

29/08/2018

CONSENT is hereby granted for Operation under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of Air (Prevention & Control of Pollution) Act 1981 and amendments thereof and Authorisation under Rule 6 of the Hazardous & Other Wastes (Management and Transboundary, Movement) Rules, 2016 and the rules and orders made there under (hereinafter referred to as 'the Acts', 'the Rules') to:

M/s. Visakha Solvents Ltd.,
(Expansion)
Plot No.84 A, JNPC
Parawada,
Visakhapatnam - 531 021
E Mail: visakhasolvents@gmail.com

(hereinafter referred to as 'the Applicant') authorizing to operate the industrial plant to discharge the effluents from the outlets and the quantity of Emissions per hour from the chimneys as detailed below.

i. Out lets for discharge of effluents:

Outlet No.	Outlet Description	Max Daily Discharge KLD	Point of Disposal
1.	Process Effluents Process - 3.0 KLD + Washings - 1.0 KLD + Cooling towers - 2.0 KLD	6.0	To the CETP of Pharmacity for treatment and disposal.
2.	Domestic Effluents	1.0	To the CETP of Pharmacity.

ii) Emissions from chimneys:

Chimney No.	Description of Chimney	Quantity of Emissions at peak flow
1.	Attached to 1x200 KVA DG Set	--

The industry shall use Steam requirement of the Solvent Recovery unit shall be met from Boiler of CETP. No separate boiler shall install for solvent recovery unit.

ii) HAZARDOUS WASTE AUTHORISATION (FORM - II) [See Rule 6 (2)]

M/s. Visakha Solvents Ltd., CETP Premises, Jawaharlal Nehru Pharma City, Parawada, Visakhapatnam District., is hereby granted an authorization to operate a facility for collection, reception, storage, treatment, transport and disposal of Hazardous Wastes namely:

• **HAZARDOUS WASTES WITH DISPOSAL OPTION:**

S. No.	Name of the hazardous waste	Stream	Quantity	Disposal Option
1.	Process residue Distillation Residue	28.5 of Schedule - I	1000 Kg/day	TSDF, Parawada, Visakhapatnam District for incineration/ cement units for co-processing.
2.	Waste Oil	5.1 of Schedule - 1	10 LPA	Authorized agencies

This consent order is valid to manufacture the following products along with quantities only.

S.No	Product	Quantity
1.	Recovered solvents from Spent solvents / mixed solvents and Distilled Solvents / Paint Thinner	25 KLD

This order is subject to the provisions of 'the Acts' and the Rules' and orders made thereunder and further subject to the terms and conditions incorporated in the schedule A, B & C enclosed to this order.

This combined order of consent & Hazardous Waste Authorisation shall be valid for a period ending with the 31st day of July, 2023.

VIVEK YADAV IAS
MEMBER SECRETARY

To
M/s. Visakha Solvents Ltd.,
(Expansion)
Plot No.84 A, JNPC
Parawada,
Visakhapatnam - 531 021

Copy To:

1. The JCEE, Zonal Office, **Visakhapatnam** for information and necessary action.
2. The JCEE, Unit-II, APPCB **Vijayawada** for information.
3. The Environmental Engineer, Regional Office, **Visakhapatnam** for information and necessary action.

SCHEDULE - A

1. Any up-set condition in any industrial plant / activity of the industry, which result in, increased effluent / emission discharge and/ or violation of standards

stipulated in this order shall be informed to this Board, under intimation to the Collector and District Magistrate and take immediate action to bring down the discharge / emission below the limits.

2. The industry should carryout analysis of waste water discharges or emissions through chimneys for the parameters mentioned in this order on quarterly basis and submit to the Board.
3. All the rules & regulations notified by Ministry of Law and Justice, Government of India regarding Public Liability Insurance Act, 1991 should be followed as applicable.
4. The industry should put up two sign boards (6x4 ft. each) at publicly visible places at the main gate indicating the products, effluent discharge standards, air emission standards, hazardous waste quantities and validity of CFO and exhibit the CFO order at a prominent place in the factory premises.
5. Not withstanding anything contained in this consent order, the Board hereby reserves the right and powers to review / revoke any and/or all the conditions imposed herein above and to make such variations as deemed fit for the purpose of the Acts by the Board.
6. The applicant shall submit Environment statement in Form V before 30th September every year as per Rule No.14 of E(P) Rules, 1986 & amendments thereof.
7. The applicant should make applications through Online for renewal of Consent (under Water and Air Acts) and Authorization under H&OW (M&TM) Rules, 2016 at least 120 days before the date of expiry of this order, along with prescribed fee under Water and Air Acts and detailed compliance of CFO conditions for obtaining Consent & HW Authorization of the Board. The industry should immediately submit the revised application for consent to this Board in the event of any change in the raw material used, processes employed, quantity of trade effluents & quantity of emissions. Any change in the management shall be informed to the Board. The person authorized should not let out the premises / lend / sell / transfer their industrial premises without obtaining prior permission of the State Pollution Control Board.
8. Any person aggrieved by an order made by the State Board under Section 25, Section 26, Section 27 of Water Act, 1974 or Section 21 of Air Act, 1981 may within thirty days from the date on which the order is communicated to him, prefer an appeal as per Andhra Pradesh Water Rules, 1976 and Air Rules 1982, to Appellate authority constituted under Section 28 of the Water(Prevention and Control of Pollution) Act, 1974 and Section 31 of the Air(Prevention and Control of Pollution) Act, 1981.

SCHEDULE - B

Special Conditions

WATER POLLUTION:

1. The LTDS effluents sent to CETP, Pharmacy shall not contain constituents in excess of the tolerance limits mentioned below, as per their MoU with M/s Ramky Pharma City.

Outlet	Parameter	Concentration in mg/l
1.	pH	6.50 - 8.50
	Temperature °C	< 45 ⁰ C
	TDS	12,000 mg/l
	TSS	600 mg/l
	BOD	3,000 mg/l
	COD	8,000 mg/l

Oil and Grease	20 mg/l
Chromium Hexavalent (as Cr+6)	2 mg/l
Chromium (total) (as Cr)	2 mg/l
Ammonical Nitrogen (as N)	30 mg/l
Cyanide (as CN)	0.20 mg/l
Lead (as Pb)	1 mg/l
Nickel (as Ni)	3 mg/l
Zinc (as Zn)	15 mg/l
Arsenic (as As)	0.20 mg/l
Mercury (as Hg)	0.01 mg/l

2. The industry shall take steps to reduce water consumption to the extent possible and consumption shall NOT exceed the quantities mentioned below:

S.No.	Purpose	Quantity
1.	Washings	1.0 KLD
2.	Cooling towers	10.0 KLD
3.	Domestic	2.0 KLD
4.	Green belt	1.0 KLD
	Total	14.0 KLD

3. Effluents shall not be discharged on land or into any water bodies or aquifers under any circumstances. Floor washing shall be admitted into the effluent collection system only and shall not be allowed to find their way in storm drains or open areas. All pipe valves, sewers, drains shall be leak proof.
4. The industry shall provide proper lining to the collection tanks to prevent seepage of effluents.

AIR POLLUTION:

5. The industry shall provide and maintain online VOC analyser with recording facility within 1 month.
6. The industry shall comply with ambient air quality standards of PM10 (Particulate Matter size less than 10 μ m) - 100 μ g/ m³; PM2.5(Particulate Matter size less than 2.5 μ m) - 60 μ g/ m³; SO₂ - 80 μ g/ m³; NO_x - 80 μ g/m³, outside the factory premises at the periphery of the industry.

Standards for other parameters as mentioned in the National Ambient Air Quality Standards CPCB Notification No.B-29016/20/90/PCI-I, dated 18.11.2009

Noise Levels: Day time (6 AM to 10 PM) - 75 dB (A)

Night time (10 PM to 6 AM) - 70 dB (A).

7. The industry shall not cause any air pollution / odour nuisance in the surrounding environment.

GENERAL:

8. The industry shall take all necessary safety measures while handling solvents and solvent residues.
9. The industry shall not increase the capacity beyond the permitted capacity mentioned in this order, without obtaining CFE & CFO of the Board.
10. The industry shall maintain & submit manifest copies of the solvents received on a monthly basis to the A.P. Pollution Control Board.
11. Sale details of the distilled solvent shall also be submitted to the A.P. Pollution Control Board regularly on a monthly basis.

12. The industry shall submit the inventory of the solvent to the Board regularly on a monthly basis.
13. The industry shall place the solvent / chemical drums and / or any drums in a shed provided with concrete platform only. The Platform shall be provided with sufficient dyke wall and effluent collection system. The industry shall provide containers detoxification facility. Container & Container liners shall be detoxified at the specified covered platform with dyke walls and the wash wastewater shall be routed to process and washing effluent collection tank.
14. Green belt shall be developed all along the boundary & vacant spaces with tall growing trees with good canopy and it shall not be less than 33% of the total area.
15. The industry shall not carry out any other activity except for the recovery of spent solvents as submitted in CFO.
16. The industry shall comply with the conditions stipulated in the CFE (Expansion) order dated 14.06.2018.
17. The industry shall store the chemical drums under the shed.
18. The industry shall maintain good house keeping within the plant premises.
19. The industry shall take the following measures to prevent solvent losses:
 - i. Solvent handling pump shall have mechanical seals to prevent leakages.
 - ii. The condensers shall be provided with sufficient HTA and residence time so as to achieve more than 95% recovery.
 - iii. Solvent shall be stored in a separate space specified with all safety measures.
 - iv. Proper earthing shall be provided in all the electrical equipment wherever solvent handling is done.
 - v. Entire plant shall be flame proof. The solvent storage tanks shall be provided condenser to prevent solvent loss.

SCHEDULE - C

[see rule 6(2)]

**[CONDITIONS OF AUTHORISATION FOR OCCUPIER OR OPERATOR HANDLING
HAZARDOUS WASTES]**

1. All the rules and regulations notified by Ministry of Environment and Forests, Government of India under the E(P) Act, 1986 in respect of management, handling, transportation and storage of the Hazardous wastes should be followed.
2. The industry shall not store hazardous waste for more than 90 days as per the Hazardous & Other Wastes (Management & Transboundary Movement) Rules, 2016 and amendments thereof.
3. The industry shall store Used / Waste Oil and Used Lead Acid Batteries in a secured way in their premises till its disposal to the manufacturers / dealers on buyback basis.
4. The industry shall maintain 7 copy manifest system for transportation of waste generated and a copy shall be submitted to concerned Regional Office of APPCB. The driver who transports Hazardous Waste should be well acquainted about the procedure to be followed in case of an emergency during transit. The transporter should carry a Transport Emergency (TREM) Card.
5. The industry shall maintain proper records for Hazardous & other wastes stated in Authorisation in FORM-3 i.e., quantity of Incinerable waste, land disposal waste, recyclable waste etc., and file annual returns in Form- 4 as per Rule 6 (5) of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules, 2016 and amendments thereof.
6. The industry shall submit the condition wise compliance report of the conditions stipulated in Schedule A, B & C of this Order on half yearly basis to Board Office,

Vijayawada and concerned Regional Office.

VIVEK YADAV IAS
MEMBER SECRETARY

To

M/s. Visakha Solvents Ltd.,
(Expansion)
Plot No.84 A, JNPC
Parawada,
Visakhapatnam - 531 021

Signature Not Verified

Digitally signed by VIVEK
YADAV
Date: 2018.08.29 12:03:17 IST
Reason: Approved





ANDHRA PRADESH POLLUTION CONTROL BOARD
D.No.33-26-14D/2, Near Sunrise Hospital, Pushpa Hotel Centre,
Chalamalavari Street, Kasturibaipet, Vijayawada - 520 010
Phone. No.0866-2436217, Website : www.appcb.ap.nic.in

AUTO RENEWAL OF CONSENT AND AUTHORISATION ORDER FOR OPERATIONS

In response to your application dated 19.03.2018 for Auto Renewal of Consent for Operation & Hazardous waste Authorisation Order, the Board is hereby extending validity period of Consent and Authorisation order issued vide Order **7736-VSP/APPCB/ZO-VSP/CFO/2015-373, dated 06.06.2015** and valid upto 31.07.2018, for further period of 5 (five) years i.e., **upto 31.07.2023** under Sections 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under Section 21 of Air (Prevention & Control of Pollution) Act 1981 and amendments thereof and Authorisation under Rule 6 of the Hazardous & Other Wastes (Management & Transboundary, Movement) Rules, 2016.

1. All other conditions mentioned in Schedules A, B & C of the combined CFO&HWA order issued by the Board vide order dated 06.06.2015 will remain same.
2. The industry shall comply with the standards issued by MoEF&CC / CPCB from time to time.
3. The facility shall submit the compliance report to all the stipulated conditions for Consent for Operation for every six months i.e. on 1st of January and 1st of July of every year.
4. The facility shall ensure that dedicated fund is allotted towards Environment Relief Fund (ERF) in the Public Liability Insurance policy and submit a copy of the policy at the Regional Office: Visakhapatnam every year.
5. In case of false certification, non compliance of conditions / directions and deficiency in furnishing the information by the industry, the Board can withdraw the auto renewed consent and take action under provisions of relevant Acts & Rules.

Bandla Siva Sankar Prasad
Digitally signed by Bandla Siva Sankar Prasad
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Head Office: cn=Bandla Siva Sankar Prasad, postalCode=520010,
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Date: 2018.04.03 10:08:39 +05'30'
MEMBER SECRETARY

Dated: 02.04.2018

To
M/s. Visakha Solvents Limited,
Plot No.84 A, JN Pharmacy,
Parawada, Visakhapatnam
E-mail: visakhasolvents@gmail.com

Copy to:

1. The JCEE, Zonal Office, **Visakapatnam** for information and necessary action.
2. The JCEE, Unit-II, APPCB, **Vijayawada** for information.
3. The JCEE (HWM), APPCB **Vijayawada** for information.
4. The Environmental Engineer, Regional Office, Visakhapatnam for information and necessary action.



www.visakhasolvents.com

To
Honorable Members,
Joint Monitoring Committee,
National Green Tribunal.

Dear Sir/Madam,

We humbly thank you for giving us this opportunity to present our views to the committee.

We are a common Solvent Recovery Plant (SRP) conceived and established as a service to the member industries of JN Pharma City (JNPC Vizag). The SRP was built at a cost of Rs 4.7 crs in a land leased from JNPC and was co-located with CETP (Common Effluent Treatment plant) and CHWTSDF (Solid Hazardous waste facility) and drawing steam from a common boiler.

It became operational in January 2011 and has been serving industries in and around JNPC. There are at present 73 member industries and we augment their in-house capacity to recycle spent solvents. Almost 35 of them have utilized our services during the last 10 years. One of the principal aims to have a common SRP is to track and account spent solvents coming out of JNPC and we have fulfilled that as well over the last 10 years by keeping records and submitting them regularly to APPCB. During these 10 years we have processed close to 75,000,000 kgs (75,000 tonnes) of spent solvent and have contributed for reduction of pollution and preservation of natural resources. A lot of these solvents recovered are imported and recycling them not only reduces consumption of valuable natural resources but reduces India's import bill.

As part of our operations we have established proper SOPs for receiving, processing various mixes of spent solvents and further disposal of waste generated, and have strictly adhered to them. Over the 10 years of operation we had maintained a perfect safety record with zero accidents. We have strong safety training program and we have followed safety training and mock drill schedules that were established. Each of our employees is trained in all the SOPs. We have a qualified staff with 75% of operational staff with B.Tech (Chemical Engineering) or M.Sc (chemistry) or B.Sc (chemistry) degrees. All of them are trained in handling of chemicals and solvents.

On the day of the unfortunate incident the operations being undertaken were also covered by the SOPs. We have commissioned a competent and independent third party safety consultant to analyze the incident and give us recommendations as to further improvements.

G. Rudhira Reddy

Corp off: 6-3-1089/G13, Ramky Grandiose, Ramky Towers, Gachi Bowli, Hyderabad, Telangana - 500032.



CIN : U74900AP2008PLC061618

Office Address:
Visakha Solvents Ltd., Plot No. 84A, C E T P Premises, J.N.P.C., Parawada,
Visakhapatnam - 531 021, A.P., India. Mob.: 9949666555



We have regularly submitted compliance reports to APPCB and were subject to inspections from time to time. The last inspection happened in February-2020, while our bi-annual CFO compliance report was submitted in June-2020. Any observations and audit findings were followed through. We have been in compliance of all our CFO conditions. We have complied with most of the SOPs circulated for Solvent Recovery Units. Two of the shortcomings we were working towards fulfilling them. We have disposed our solid waste through CHWTSDf and effluent through CETP without exceptions.

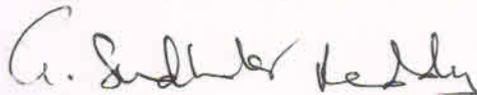
We would like to bring to The Honorable committee's notice that there is absolutely no environmental damage beyond our premises during this incident. The continuous process industries near our site have not stopped production for even a single shift and there has been no reported/observed effect beyond our premises. All the runoff has been collected and sent to CETP. Only superficial discoloration in some areas of the plant is noticed. We have commissioned a MoEF registered, NABET and NABL accredited, third party to study and prepare a remediation plan which we will submit to the honorable committee. We are committed to comply with any recommendations given.

We are a small scale industry established to serve environmental needs of Pharma industry. In this incident we suffered a total loss of all buildings and Plant & Machinery. We are not in a position to resume business anytime soon. We have agreed to pay compensation of Rs 70 lakhs to families of our employees deceased in the accident. Out of which we have already paid Rs 60 lakhs to the families and will disburse the rest soon. We have already spent additional 30 lakhs towards hospital expenses, finding jobs for our employees and paying them generous severance package. We will also implement the environmental remediation plan.

We would like to humbly bring to committee's notice that recycling industry such as our selves are required to reduce environmental impact of industries. As a whole we believe we have been a positive contributor for reducing pollution during the last 10 years. We have also been diligent in paying any compensations and costs due to this unfortunate accident and we therefore beg for a kind and lenient consideration to our submission.

Yours Sincerely

For Visakha Solvents Ltd



Director



Corp off: 6-3-1089/G13, Ramky Grandiose, Ramky Towers, Gachi Bowli, Hyderabad, Telangana - 500032.



**ANDHRA PRADESH POLLUTION CONTROL BOARD
ZONAL OFFICE :: VISAKHAPATNAM**

D.No.39-33-20/4/1, Madhavadhara Vuda Colony, Visakhapatnam - 530018.

Ph: 0891-2719380

Order No. 7736/PCB/ZO-VSP/VSP/Tech./2020

Dt. 14.07.2020

Sub : APPCB-ZO-VSP - **M/s. Visakha Solvents Ltd., Plot No.84 A, J.N.Pharmacy, Parawada, Visakhapatnam District** – Fire accident occurred at 10.30PM on 13.07.2020 resulting in death of one person died and critical injuries to one person – Causing severe air pollution due to release of emissions – ***Withdrawal of CFO & HWA orders – Stop Production Order - Issued*** – Reg.

- Ref : 1. CFO&HWA Order No.7736-VSP/APPCB/ZO-VSP/CFO/2015, dt. 06.06.2015 valid up to 31.07.2018.
2. CFO Auto Renewal order Dt. 02.04.2018 valid up to 31.07.2023.
3. CFO & HWA Order No.APPCB/VSP/VSP/3/CFO/HO/2018, dt.29.08.2018 valid up to 31.07.2023.
4. Instructions of the Member Secretary A.P. Pollution Control Board received on 14.07.2020.
5. Preliminary report of EE (FAC), RO, Visakhapatnam, APPCB dt. 14.07.2020.

WHEREAS, you are operating the industry in the name and style of **M/s. Visakha Solvents Ltd., Plot No.84 A, Jn Pharmacy, Parawada, Visakhapatnam District.**

WHEREAS, A.P. Pollution Control Board vide ref. 1st, 2nd & 3rd cited issued Consent for Operation (CFO) & Hazardous Waste Authorization (HWA) to your industry to operate Solvent Recovery unit with certain conditions which are valid up to 31.07.2023.

WHEREAS, the EE (FAC), APPCB vide reference 5th cited reported that a fire accident occurred in your industry at around 10.30 PM on 13.07.2020 resulting in the death of one person and severely injuring one person.

WHEREAS, huge quantity of emissions resulting from the chemical fire accident are emitted into environment causing severe air pollution problems in the surrounding areas thereby endangering public health and environment.

In view of the above A.P. Pollution Control Board hereby withdraw your CFO & HWA orders issued vide reference 1st, 2nd & 3rd cited and also issues the **Stop Production Order** under section 33(A) of the Water (Prevention and Control of Pollution) Act, 1974 and amendments thereof, and under Section 31(A) of Air (Prevention and Control of Pollution) Act, 1981 and amendments thereof in the interest of Public Health & Environment.

This order comes into effect from today i.e. 14.07.2020.

This order is issued with the approval of the Member Secretary, A.P. Pollution Control Board.

Rajendra

Reddy Thuraka

Digitally signed by
Rajendra Reddy Thuraka
Date: 2020.07.14
16:17:53 +05'30'

JOINT CHIEF ENVIRONMENTAL ENGINEER

To
M/s. Visakha Solvents Ltd.,
Plot No.84 A, Jn Pharmacy, Parawada,
Visakhapatnam District.



ANDHRA PRADESH POLLUTION CONTROL BOARD

D.No.33-26-14, D/2, Near Sunrise Hospital, Pushpa Hotel Centre,
Chalamalavari street, Kasturibaipet, Vijayawada – 520 010

Phone:0866-2463200.
Grams : Kalusya Nivarana
Website :www.appcb.ap.nic.in

Regd. Post with Ack Due

Order No.581/APPCB/UH-II/TF/VSP/2018-

Date: 22.07.2020

SHOW CAUSE NOTICE

- Sub : **APPCB – UH-II - TF - M/s. Visakha Solvents Ltd., Plot No.84 A, J.N.Pharmacy, Parawada, Visakhapatnam District – Fire accident occurred at 10.30 PM on 13.07.2020 resulting in death of one person and critical injuries to one person – Causing severe air pollution due to release of emissions – *Imposing interim Environmental Compensation* – Reg**
- Ref : 1. Auto renewal of CFO order dt.02.04.2018 valid upto 31.07.2023.
2. Consent Order No: APPCB /VSP /VSP /3 /CFO /HO /2018 dt.29.08.2018 valid upto 31.07.2023.
3. Fire accident on 13.07.2020
4. Order No.7736/PCB/ZO-VSP/VSP/Tech./2020, dt.14.07.2020
5. Guidelines on implementing the liabilities for Environmental damages due to handling & Disposal of Hazardous waste and penalty issued by CPCB in Jan'2016.
6. Guidelines on determination of Environmental Compensation to be recovered for violation of Hazardous and other waste Rules, 2016 issued by CPCB in May'2019.

WHEREAS M/s. Visakha Solvents Ltd is a standalone solvent recovery unit to produce recovered solvents from Spent solvents / mixed solvents and Distilled Solvents / Paint Thinner by processing the spent solvents procured from various bulk drug industries.

WHEREAS the Board vide reference 1st cited, has issued CFO order dt: 02.04.2018 for recovery of spent solvents 25 KLD and vide ref. 2nd cited has issued CFO Order dt: 29.08.2018 for capacity enhancement of 25 KLD including the manufacture of paint thinner valid upto 31.07.2023.

WHEREAS the fire accident occurred at M/s. Visakha Solvents Ltd on 13.07.2020.

WHEREAS the APPCB vide reference 4th cited issued *Withdrawal of CFO & HWA and Stop production order* to your unit

WHEREAS the Hon'ble NGT Suo-Moto took up the case vide OA No.134/2020.

WHEREAS vide ref. 5th cited CPCB issued guidelines on implementing the liabilities for Environmental damages due to handling & Disposal of Hazardous waste and penalty

WHEREAS as per the CPCB guidelines in case of fire accident leading to spillage of hazardous waste, containment of runoff water, the cost liability for site assessment / risk assessment is indicated as INR 20 Lakhs to INR 1 Crore, and cost liability for remediation is INR 1 Crore to 7.5 Crores.

WHEREAS the Board hereby impose interim Environmental Compensation of Rs. 1 Crore to be paid by you as towards immediate response liability, site assessment / risk assessment liability and remediation liability.

In view of above, the Board hereby issues the show cause notice directing you to show cause why the Board shall not levy environmental compensation for Rs. 1 Crore for causing the Environmental damage as mentioned above.

Your reply shall reach this office within 15 days from the date of the receipt of this notice failing which necessary orders will be passed levying the environmental compensation, without any further notice.

**Sd/-
MEMBER SECRETARY**

✓
**To
The Occupier,
M/s. Visakha Solvents Ltd.,
Plot No.84 A,
J.N.Pharmacy,
Parawada,
Visakhapatnam District**

// T.C.F.E.O //

Chit
**JOINT CHIEF ENVIRONMENTAL ENGINEER
UH-II**