

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

(By Video Conferencing)

Original Application No.272/2022

In re: News item published in The Times of India dated 12th April, 2022,
titled “**Six killed in chemical factory blast in Gujarat**”

Date of hearing: 29.08.2022

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE PROF. A. SENTHIL VEL, EXPERT MEMBER**

Respondent): Mr. Maulik Nanavati, Advocate for GPCB

ORDER

1. Proceedings in this matter have been initiated suo motu based on captioned media report to the effect that six persons died in an explosion at a chemical factory – Om Organic, at Dahej GIDC, District Bharuch, Gujarat. Fire broke out at 1.00 AM on 12.4.2022 followed by the explosion. Blast was heard upto 1 Km. away. *Ex-gratia* compensation of Rs. 2 Lakhs each is said to have been declared from the PMNRF to the heirs of the deceased and Rs. 50,000 for the injured.

2. The Tribunal first considered the matter vide order dated 12.04.2022. It was observed that questions of compliance of environmental safety norms, liability to compensate the heirs of the deceased and for damage to environment and steps for prevention of such incidents in future were required to be gone into. Accordingly, a five-Member Committee of CPCB, State PCB, District Magistrate,

Bharuch, Director, Industrial Safety Gujarat and State Disaster Management Authority was constituted to visit the site, ascertain the cause of incident, extent of loss, quantum of compensation required to be paid and steps to prevent such incidents and to give a report to this Tribunal a copy of which was also to be served on the PP. The operative part of the order is reproduced below:-

“1....xxxx.....xxx.....xxx

2. Question which is required to be gone into is whether the unit in question is compliant with the environmental safety norms inter-alia under Manufacture, Storage and Import of Hazardous Chemical Rules, 1989, particularly with regard to holding of mock drills, preparation of onsite and offsite emergency plans, taking insurance liability policies, having valid CTO and Authorizations under the Environment (Protection) Rules, 1986. As laid down in *M.C. Mehta v. UOI & Ors*¹, the unit where commercial hazardous activity is undertaken is absolutely liable for any loss of human lives. Heirs of the deceased and also the injured are required to be paid compensation on principle of restoration which has been subject matter of several orders of this Tribunal in recent past, including the orders dated 03.02.2021², 08.01.2021³, 14.12.2021⁴, 08.11.2021⁵ and 18.01.2022⁶ pertaining to Dahej GIDC where the present incident has taken place.

3. Accordingly, we constitute a five-member joint Committee of CPCB, State PCB, District Magistrate, Bharuch, Director, Industrial Safety Gujarat and State Disaster Management Authority to undertake visit to the site to ascertain the cause of the incident, extent of loss to living beings and other environment and compensation required, amount of compensation paid, persons responsible and to identify steps to prevent such incident in future. The CPCB and State PCB will jointly act as nodal agency for coordination and compliance. The joint Committee may take into account the reports earlier submitted to this Tribunal in respect of similar incidents which are available at the website of the CPCB. The statutory regulators may ensure that compensation payable to the heirs of the deceased and to the injured is duly paid in absence of which the unit may not be allowed to function. The Committee may also coordinate with any other individual or agency or stake

¹ (1987) 1 SCC 395

² O.A. No. 85/2020, Aryavart Foundation through its President v. Yashyashvi Rasayan Pvt. Ltd. & Anr.

³ O.A. No. 107/2020, In Re: News item published in the local daily “Indian Express Sunday Express” dated 28.06.2020 titled “Gas Leak in Agro Company Claims life of one”

⁴ O.A. No. 60/2021, In Re: News item published in the Hindu dated 23.02.2021 titled “Two dead, 5 missing in fire at UPL Plant”

⁵ O.A. No. 31/2021 (WZ), Rakesh Sureshchandra Kapadiya v. GPCB & Ors.

⁶ O.A. No. 05/2022, In re: News item published in The Indian Express dated 07.01.2022 titled **“Gujarat: At least 06 dead, 20 sick after gas leak at industrial area in Surat”**

holders. It may also be ascertained whether earlier directions of this Tribunal on the subject have been acted upon by the Chief Secretary, Gujarat and other authorities in the State.

4. **The Authorities may also put the Project Proponent (PP) to notice of these proceedings for its response, if any, before the next date. The joint Committee may also simultaneously give a copy of the report to the PP.** This order is without prejudice to liability under the criminal or any other law. A factual and action taken report in the matter may be filed within two 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.”

3. In response to the above, report of the joint Committee has been filed on 22.07.2022. It mentions holding of meetings of the joint Committee, visit to the site, interaction with the representatives of the PP, collection of the information relating to the incident and deliberations about the quantum of compensation. Relevant extracts from the report are as follows:-

“3.0 About the unit where accident took Place

3.1 Plant and process

*M/s Om Organic is located at Plot No. D-3/150/1, Phase –III, GIDC Estate Dahej, Tal. Vagra, Dist. Bharuch, Gujarat. **Unit is engaged in distillation of spent solvents for the recovery of usable solvents. For this purpose, unit has installed 5 reactors. Besides, two distillation columns, primary and secondary condenser, cooling tower, chilling plant and carbon tower are installed for the same.***

xxx.....xxxx.....xxx

3.3 Manufacturing Process:

Distillation of spent solvent involves loading of reactor with spent solvent and additives using pump, heating of the mixture for fractional distillation to separate the products followed by condensing (2 stage).

*In a reactor, **spent solvents (Toluene / Xylene / Acetone / MIBK / Methanol / IPA / MDC / Ethyl Acetate / DMF / Butanol / MEK / Cyclohexane / THF / Isopropyl Ether / Butyl Acetate / Methyl Acetate / Benzene / Ethanol, etc)** is charged alongwith additives (Na₂CO₃, NaOH, etc.) and heated with the help of steam. After heating the material enters column. The column is having SS suzler packing. After column, material enters primary and secondary condenser in series followed by*

receiver. The vapour of distillate is collected in receiver. From receiver, the purified material is stored and inter cut material is again sent to reactor. Each column is having two receivers. The discharged hazardous waste i.e. residue from reactor is collected for disposal. The reactor vessels have individual capacity of 10 KL. Column is having 45 feet (about 13.7m) height and 0.6 m diameter. The primary and secondary condenser is having heat exchange area of 30 m² and 10 m² respectively. The diameter of vapour line is about 6 inch (0.1524 m). The chiller is having capacity of 32 TR (Tons of refrigeration). TR is the amount of heat transferred to freeze or melt 1 ton of ice at 0°C in 24 hours. 1 TR is approximately 3024 Kcal/hr of energy/heat load. Cooling tower capacity is about 500 TR. The schematic flow diagram of the process is given in Annexure-I. It was observed that ejector based vacuum control mechanism was installed in the unit.

4.0 THE ACCIDENT, EFFECTS AND CONSEQUENCES

4.1. To ascertain cause of incident.

3.1.1. Cause of incident reported by the unit

As informed by the unit, the explosion may have occurred due to increase in temperature of the Reactor No. 105 during distillation of dimethyl formamide spent solvent.

3.1.2. Cause of incident reported by DISH

- In reactor no. 105, before charging of new batch on 09.04.2022, it may be possible that residue to previous batch not removed properly as there was no cleaning SOP in existence at the time of accident. Dimethyl formamide recovery from distillate residue require significant caution. The high temperature decomposition of dimethyl formamide and its incompatibility with various halogens, bases and acids is established. Recovery from spent solvent after each batch require proper cleaning to avoid unwanted chemical reaction of incompatible material and decomposition of any of its component. If residue of previous batch remain present in reactor R 105 and charging new batch in same reactor may increase the volume of the batch size which may led to increase in temperature and cause explosion and fire (Annexure XIV).*

3.1.3. Cause of accident as per the Joint Committee

The committee visited the site and collected information from the industry representative, neighbouring industries, officers from various authorities like DISH, GPCB those visited the industry immediately after the accident etc. Based on the available information sequence of event and probable reasons of accident are detailed below.

4.1.3.1 Sequence of events

- *At the time of explosion 4 reactors were operational. Mixed solvent brought from M/s Ami Life Sciences, Vadodara was being distilled in reactor No. 101 and Reactor No. 103. Dimethyl formamide (DMF) brought from M/s Intas Pharma, Ahmedabad was under distillation in reactor No. 104 and reactor no. 105.*
- *As per CCTV footage from (about 00:45 hours till fire fighting started), there was activity at first floor which may be for addressing leakage/ fume as minor fume and bright light observed at this location which gradually intensified before blast. Minor fuming at the first floor above the reactor No. 104 and reactor No. 105 near the distillation column bottom was also observed in CCTV footage. Information from security personnel of M/s Mane India Pvt. Ltd. present at the time of accident was collected over telephone as he could not be personally approached. The security guard informed that some metallic sound and shouting of workers were noticed before blast.*
- *At about 00:47:09 hours, a flash of fire observed at reactor level which was followed by explosion in Reactor No. 105 and falling down of reactor no. 104.*
- *Huge amount of fume and fire spread in all directions. Fire continued for more than half an hour unattended. Thereafter firefighting was started at around 01:17 hours.*

4.1.3.2. Probable reasons of fire

- *Operational data related to reactor and distillation column, receiver material levels, P&ID diagram and design details of reactor and distillation column, etc. asked during visit was not made available by the unit. Pressure relief valve/ rupture disc was not observed by the team on damaged reactor No. 104 and also not found. Absence of data of temperature and pressure, exact reason for explosion and nature of explosion (thermal instability, impurity build up, water ingress, choking, pressure build up, etc.) could not be established. The committee deliberated the issue and concludes that even if the safety vent were available, it might not operate on pressure build up.*
- *Dimethyl formamide recovery from distillation residue requires significant caution. The high temperature decomposition of dimethyl formamide and its incompatibility with various halogens, bases and acids is established (eg. Organic Process Research & Development 2019, 23, pages 1586–1601, 2210-2217 and other literature sources). Any recovery of dimethyl formamide requires monitoring and control of pressure and temperature as the decomposition of dimethyl formamide is generally exothermic. **Literature shows that recovery from spent solvent after each batch require proper cleaning to avoid any unwanted chemical reaction of incompatible material and decomposition of any of its component. The information/ SOP in this regard was not made available by the unit.***

- It was informed by the unit during visit that the plant is operated manually. It was observed that pressure and temperature devices were installed in Reactor No.101, Reactor No.102, and Reactor No.103. However, no proper provision for emergency removal of material from reactor/column was observed. It was also informed that reaction conditions (pressure, temperature, load, etc.) were maintained manually. **It was also inferred from the discussion that training of plant operators was inadequate to handle such sensitive operations.** Thus, technically incompetent operators/ helpers were not deployed by the unit management.
- Based on circumstantial information and CCTV footage, it is inferred that blast was mainly caused due to increase in temperature which resulted in thermal decomposition of dimethyl formamide and hence increase in pressure leading to blast. *Sittings Handbook of Toxic and Hazardous chemicals and Carcinogens (6th edition)* has clearly warned about the violent reactions of DMF. A closed cup flash point of DMF is 60°C.

It can be said that temperature increase may have been caused due to fire triggered from spark while addressing leakage/ fume which would have caught by the flammable liquid. Orange to reddish illumination observed in CCTV footage also at the first floor above reactor height and red flash observed on reactor before blast. CCTV footage is attached in a CD.

From the video footage, it was seen that fire spread all along the reactor side towards M/s M/s. Sitamani Organics Pvt. Ltd. and M/s Mane India Pvt. Ltd. but not significantly spread towards boiler area of the unit because reactor No. 5 was ruptured almost opposite to the boiler area

4.2 To ascertain extent of loss of living beings and compensation require

Explosion occurred at midnight at about 00:47:09 hours on 11.04.2022 as found from CCTV footage collected from M/s. Mane India Pvt. Ltd. Industries and firefighting started at about 01:17 hours. Fire was controlled by 5:00 hours in the morning. **The unit has not installed CCTV and hence, the activities before or after the explosion within the premises is not available. Records of manufacturing were also reported as destroyed. Effect of the blast on neighbouring industries was observed which included breaking of window glass and glass panels, cracks in walls & POP false ceiling etc.** The committee has explored various aspects like referring to available literatures, documents/ records submitted by the unit, interactions with various officials of the unit, report submitted by DISH, internal investigation report submitted by the unit, safety aspects, inputs from the experts etc. for analysis of the probable cause of the accident. CCTV footage of nearby Industry was obtained and examined which shows that initially explosion happened and then fire spread. Altogether 08 persons were working in the plant at the time

of explosion. Six workers in the area reportedly lost their lives. The workers who lost their lives are as under based on the information from Police Department (**Annexure-II**).

- (i) Shri Paras Nath Yadav
- (ii) Shri Bambharoliya Jaydip Prabhudasbhai
- (iii) Shri Ratan Kumar Kuswaha
- (iv) Shri Prakash Vasava (Ramubhai Vasava)
- (v) Shri Punit Mahto
- (vi) Shri Teerath Gadari

The fire spread in reactor area as well as in raw material and finished goods area. PVC drums kept adjacent to the explosion site were by and large burnt. An area of about 11m × 24m and 6m × 12m area was having mark of drum bottom which was counted. **It is observed that more than 220 solvent and spent solvent drums of 220 litre capacity each was burnt in the accident.** The amount of solvents burnt during the explosion and fire is given in Table-3.

Table 3 Solvents burnt during the explosion and fire

Name of mixed solvent	Storage	Quantity (kgs)
Mix Solvent	Drums	15400
Mix Solvent	Drums	14960
IPA	Drums	8800
Ethyl Acetate	Drums	6600
Mix Solvent	Reactor	7000
Mix Solvent	Reactor	6000
DMF	Reactor	6000
DMF	Reactor	6000
Mix Solvent	Tank	18000
Mix Solvent	Tank	15000
Butanol	Drums	4400
Total quantity lost	1,08,160 kg	

The finished goods stored underground near main gate was saved from fire. Several drums were observed inside a shed adjacent to boiler which was neither damaged nor burnt. It was informed that, at the time of explosion dimethyl formamide spent solvent distillation was going on. Reactor No. 104 placed adjacent to Reactor No. 105 was also damaged. The control room at first floor and other surrounding area was destroyed in explosion and fire. However, area near reactor No. 101, reactor No. 102, reactor No. 103 and 2 ton per hour solid fuel fired boiler was having less damages but their electrical and other panels completely burnt. The plant structure, RCC beams and columns, etc. were severely damaged. The blast was of such intensity, that the iron pieces blown out approximate more than 125 meter away from the blast site in the premises of M/s. Sitamani Organics Pvt. Ltd.

4.3 Damage caused due to accident

Following damages are recorded by various authorities due to blast and fire accident.

1. Six workers lost their lives.
2. Reactor No. 105 was completely destroyed and part of distillation column was also destroyed.
3. Atleast 108160 kg spent solvent and finished goods destroyed and its smoke emitted into the atmosphere.
4. About 133.1 KL water and about 1.0 KL foam was used to control the fire. Water and foam mixed with spent solvent! finished goods contaminated the soil in the plant premises and in the premise of M/s Sitamani Organics Pvt. Ltd. The samples of accumulated wastewater due to fire fighting and contaminated soil were collected by GPCB after the accident. The analysis results are given as **Annexure-III**. From the analysis results, it may be seen that COD of firefighting water accumulated on ground was as high as 41,927 mg/l. The concentration of COD in contaminated soil was 142 g/kg which is significantly higher than the COD concentration in reference (uncontaminated) soil collected from surrounding (0.24 g/kg). These results indicate significant contamination of soil due to solvents.
5. Partial damage inside M/s Mane India Pvt. Ltd. occurred due to solvent splashing and blast shock waves.
6. Large amount of solvent is burnt (**Photograph-8**) which led to emission of VOCs, CO₂, particulate matter and other harmful gaseous compounds in air. There is no water body near the plant, hence no significant surface water contamination is envisaged.

5.0 Action taken by the local agencies.

Subsequent to the fire, local Fire and Safety department officials, GPCB Officials and Police reached to the site and measures were taken.

5.1 Action Taken by DISH

Subsequent to the telephonic information received, DISH officials reached the site to review the situation. Accordingly, DISH issued closure order vide letter No. DISH/Bharuch/2022/813-815 dated 11/04/2022 (**Annexure-IV**).

5.2 Action taken by GPCB

GPCB officials based on telephonic information reached the site at around 05:00 hours and reviewed the situation. Subsequently monitoring of volatile organic compounds (VOC), wastewater accumulated on land and nearby soil were carried out. GPCB issued closure directions to the unit u/s 31-A of the Air Act, 1981 vide No. GPCB/BRCH-B/CTE-519/ID-62910/659406 dated 12/04/2022 & u/s 33-A of the Water Act, 1974 vide No. GPCB/BRCH-B/CTE-519/ID-62910/659407 dated 12/04/2022. Based on the findings, GPCB imposed interim compensation of Rs. 25.0 lakhs which is yet to be paid by the unit.

5.3 Police Department

Dahej Police station has registered the accidental death case vide P.S.A. Death No.18/2022 u/s 174 of Criminal Procedure Code (**Annexure-V**) and prepared detailed 'Panchnama' of accidental location in vernacular language Gujarati (**Annexure-VI**). As per 'Panchnama', death of six persons is reported.

6.0 Compensation paid

As per the available information, the unit has paid ex gratia of Rs.3,00,000/- for each deceased and disbursed the same among the dependents of the family. In addition Ex Gratia of Rs. 2,00,000 is paid from PMNRF.

6.1 To ascertain extent of loss to the environment and compensation required

A. Gaseous emission to ambient air

Based on available information, it was gathered that pure/ raw Dimethyl formamide, Isopropyl alcohol, Ethyl acetate and Butanol were burnt. Besides this, mixed solvent is also burnt. The industry informed that data pertaining to the constituent of mixed solvent burnt in fire are not available. Hence based on alternate source i.e. the industry from which the unit procured mixed solvent for distillation, it is gathered that mixed solvent was composed of Methanol (19.9%), Acetone (47.9%), IPA (30.93%) and 1.27% as other constituents. By and large, the burnt material contained carbon, hydrogen and oxygen. Combustion of chemicals may have led to generation and release of gaseous pollutants namely oxides of nitrogen (NO_x), and carbon di-oxide (CO₂). Besides, when fire-fighting water containing solvents is released in to natural environment, there are three possible fates of such chemicals:

- a) The chemical dissolved in fire-fighting water can percolate in the soil and contaminate groundwater,
- b) A part of chemical will be volatilized in air and cause air pollution due to toxic vapours, and
- c) The remaining chemical will be absorbed on soil particles causing land pollution.

Estimation of amount of solvents vaporized

The volatilization of a volatile organic liquid from a surface depends on vapour pressure of compound, wind speed, and the ambient temperature. The volatility of a volatile organic liquid from a surface may be estimated by the following method.

Organic compound volatilized (kg/h/m²) = 0.00116xMWxPxW^{0.625}
Eqn. 1 (Source: Evaporation Rate of volatile liquids, USEPA, 1989)

Where, W = wind speed in ft/min, P = vapor pressure of compound in inch Hg, MW = molecular weight of compound in gram.

It is important to note that the volatilization of a compound from a mixture is higher than that in its pure form. The actual volatilization may be more than that estimated as shown in Table-4.

The wind speed at Dahej on 11-04-22 was noted to be 15 km/h which can be estimated to be around 9.2 km/h at 2 m height from ground level. It is difficult to estimate the surface area from where the volatilization occurs; however, it was observed by GPCB team that the firefighting water along with solvents spread over a large area encompassing some area of adjoining unit namely M/s. Sitamani Organics Pvt. Ltd. A surface area of 400 m² was estimated where solvent splash and firefighting water spread observed on land. The firefighting lasted for about 4 hours hence a conservative estimate of the time of volatilization was considered as 02 hours because during the initial period significant volatile emission due to fire in night hours would have taken place and later the burning of material resulting into prominent emission of CO₂ and NO_x. Based on the above information, the amounts of some of the compounds volatilized having lower vapour pressure (butanol, DMF, IPA) was estimated using Eq. 1 as given in Table -4. Also, CO₂ and NO_x generation due to burning of the remaining quantities of solvents is shown in Table-4. For computed high volatisation rate, it was considered that the material would have burnt in liquid and vapour phase.

Table 4 Estimation of gaseous emission due to burning of material in fire

compound	Formula	Total quantity lost, kg	volatilization rate, kg/h/m ²	Quantity lost due to volatilization, kg	Quantity burnt, kg	CO ₂ produced due to burning, kg	NO ₂ produced due to burning, kg
DMF	C ₃ H ₇ NO	12000	0.63	503.8	11496.2	20808.1	7242.6
IPA	C ₃ H ₈ O	32418	9.36	7486.9	24931.1	54848.5	0.0
Ethyl acetate	C ₄ H ₈ O ₂	6600	23.54	0.0	6600.0	13200.0	0.0
butanol	C ₄ H ₁₀ O	4400	2.43	1944.0	2456.0	5833.1	0.0
methanol	CH ₄ O	15195	11.65	0.0	15195.0	20893.1	0.0
acetone	C ₃ H ₆ O	37546	29.06	0.0	37546.0	85229.4	0.0
Total		108159		9934.6		200812.2	7242.6

A-1. Estimation of Environmental Damage compensation

For the economic cost calculation of damage related to emissions, earlier report submitted to Hon'ble National Green Tribunal in O.A. No. O.A. NO. 60/2021 and OA No. 22 of 2020 is referred. It was observed that report in O.A. No. 60/2021 and OA No. 22 Of 2020 considered Rs. 0.0225 Lakh/ MT of CO₂ emissions and Rs. 2.1729 lakh/ MT of NO₂ emission for environmental damage compensation calculation. For NO₂ emission, the reported cost in Hon'ble NGT OA No. 22 of 2020 was used. However, considering the fact that social cost of carbon emission is gradually increasing across the globe,

reliance is also made on various other scientific literature. The social cost of carbon (SCC) is a commonly employed metric of the expected economic damages from CO₂ emissions. It represents the economic cost associated with climate damage (or benefit) that results from the emission of an additional tonne of CO₂. One way to compute it is by taking the net present value of the difference between climate change damages along with a baseline climate change pathway and the same pathway with an additional incremental pulse release of CO₂. The SCC provides an economic valuation of the marginal impacts of climate change. Country-level estimates can also allow us to better understand regional impacts, which are important for adaptation and compensation measures. One of the latest scientific publication is in the year 2018 in Nature Climate Change, 2018 Volume, 8 by Katharine, et. al entitled “Country-level social cost of carbon” reported social cost of carbon dioxide emission [Ref.: (Nature Climate Change, Volume 8. Country-level social cost of carbon, Katharine Ricke, Laurent Drouet, Ken Caldeira and Massimo Tavoni, September 2018. They reported country-level contributions to the social cost of carbon emission (CSCC) as 86 US dollar/ MT CO₂ for India. Considering the current rate of one US dollar as 79.08 rupees, it was calculated that CSCC for CO₂ is Rs. 0.0680068 lakh/ MT of CO₂. Among the two values available, the cost of CO₂ emission reported in Nature Climate Change was used for calculation.

No such damage value for the release of vapours is available to the best of Committee’s knowledge. Therefore, considering the risk of production of secondary pollutants in air due to such vapour, a damage value of Rs. 2.1729 lakh per MT of vapour (i.e. rate for NO₂) was considered for calculation. Based on these damage values and available data, the total damage cost due to air pollution caused by fire and explosion is estimated as shown in below table-5.

Table 5 Estimation of Damage value due to Air pollution caused by fire

Air Pollutants emitted (Tons)	CO ₂	NO ₂	Total volatilized solvents
	200.812	7.243	9.935
Damage cost per ton of emission (Rs.)	Rs. 6,800.68	Rs. 2,17,290/-	Rs. 2,17,290/-
Damage value (in lakh rupees)	13.66	15.74	21.59
Total Damage cost (in lakh rupees)	50.99		

Thus Rs. 50.99/- lakhs is calculated as environmental damage compensation due to emission in atmosphere.

B. Water and Soil Component

The explosion at the plant caused damage to the environment emission/dischARGE of pollutants on land. No nearby water body or nalla is situated at the location hence no contamination of any water body is envisaged. All the wastewater resulting from water

used for fire-fighting contained foam and the unburnt chemicals eventually accumulated on open land as the wastewater reportedly did not reach any natural water bodies. The committee calculated the firefighting water used and subsequent steps taken by the unit to calculate the damage to the environment for the water component. As per the records available from GPCB and conversation with the agencies whose firefighting arrangements were used, 134.1KL water and foam was used during firefighting. When fire-fighting water containing organic solvents is released on land, there are atleast two possible fates of such chemical laden wastewater

- (1) The chemical dissolved in fire-fighting water can percolate in the soil causing land pollution and may contaminate groundwater.
- (2) A part of volatile chemicals (such as toluene which is less soluble) volatilized in air and cause air pollution.

GPCB has carried out monitoring of accumulated wastewater on ground in adjoining industry namely M/s. Sitamani Organics Pvt. Ltd. The damage caused and the level of impact due to organic pollutant released is evaluated in monetary terms by the Committee considering the following factors:-

- the waste of natural resources i.e. fresh water used for fighting and cost of treatment of the wastewater generated as per the prevailing treatment cost as charged by the common effluent treatment plants (CETPs). Though high COD containing wastewater was observed which requires incineration, only CETP rate was considered for computation as contaminated soil cost due to discharge was considered.
- Action taken by industry to remediate the contaminated land due to release of wastewater from the unit. It is worth to mention that the committee visited the site and observed that wastewater is either dried up or the contaminated land is covered by soil. But no sign of removal of contaminated soil and disposal in TSDF site was observed.
- The wastewater generated has not gone off site and confined to the area within the unit and adjacent industries. Accordingly, liability towards the environmental damage due to spillage of contaminated runoff water and remediation cost as per the CPCB guideline "Guidelines on Implementing Liabilities for Environmental Damages due to Handling & Disposal of Hazardous Waste and Penalty" was considered.

The total compensation towards environmental damage due to the discharge of fire-fighting water contaminated with hazardous chemicals is calculated. The fire tenders from Disaster Management Centre, Dahej (72 KL water, 200 litre foam), M/s Meghmani industries (16.6 KL water, 500 litre foam), M/s ONGC Jolva (10 KL water, 150 litre foam), M/s Sterling Auxilliaies (10.5 KL water, 100 litre foam), SEZ Fire Tenders (24 KL water, 45 litre foam) was used to douse the fire. Thus altogether 133.1 KL water and 0.995 KL foam is used. Density of firefighting foam is 1.01 gm/ml. Thus combined quantity of foam and water used is 134.1 KL. Accordingly,

corresponding wastewater generation was 134.1 KL. The unit is also having firefighting hydrants, but information related to quantity of water used or fire hydrant is not used, is not available. It may also be said that the fire hydrant would have been defunct based on site condition.

6.2 Calculation of Environmental Damage

Table 6. Calculation of Environmental Damage

Valuation of environmental damages due to release of organic load in the wastewater	Rate of freshwater in the Dahej GIDC	Treatment cost of the contaminated wastewater generated from fire fighting	Liability and Remediation Cost in case of a Fire accident leading to spillage of hazardous waste/ contaminated runoff water
	Rs. 43.51 per KL x	Rs. 80 per KL x	Rs. 20 lakhs (cost of
	133.1 KL = Rs.5791.181/- (Rs. 43.51 per KL GIDC water supply charge)	134.1 KL =Rs. 10728/-	liability for site assessment)+Rs. 100 lakhs (cost of liability for remediation=120 lakhs
Total cost: Rs. 1, 20, 16, 519.18/-			

Thus, Total amount of Rs. 120.16 Lakh is calculated for environmental damages of water and soil Component and Rs. 50.99 lakh is calculated for damage due to gaseous emission in air totalling to Rs 171.15 lakh (Rupees One crore seventy one lakh fifteen thousand) is the environmental compensation for damage caused to the environment due to explosion and fire in M/s Om organics, Dahej.

6.3 To ascertain compensation required to the deceased person

For the calculation of compensation amount for the personnel who lost their lives due to the unfortunate fire accident on 11th April 2022, **the Committee referred cases i.e. “Sarla Verma & Ors. Vs. Delhi Transport Corporation & Anr.”, “Sunita Tokas Vs. New India Insurance Co. Ltd.” and “Amrit Bhanu Shali & Ors. Vs. National Insurance Co. Ltd. & Ors.” considering the following components:**

1. Monthly salary of the deceased i.e. gross salary of deceased personnel as per the list provided by the unit.
2. **Addition to income for future prospect:** The committee has considered following criteria referring to the judgement order of Sarla Verma & Ors Vs. Delhi Transport Corporation & Anr., para 11, “In view of imponderables and uncertainties,

we are in favour of adopting as a rule of thumb, an addition of 50% of actual salary to the actual salary income of the deceased towards future prospects, where the deceased had a permanent job and was below 40 years. [Where the annual income is in the taxable range, the words ‘actual salary’ should be read as ‘actual salary less tax’]. The addition should be only 30% if the age of the deceased was 40 to 50 years. There should be no addition, where the age of deceased is more than 50 years”.

3. **Deduction for personal and living expense:** The committee has considered following criteria referring the judgement order of Sarla Verma &Ors Vs. Delhi Transport Corporation &Anr., Para 14, “Having considered several subsequent decisions of this court, we are of the view that where the deceased was married, the deduction towards personal and living expenses of the deceased, should be one-third (1/3rd) where the number of dependent family members is 2 to 3, one-fourth(1/4 th) where the number of dependant family members is 4 to 6, and one-fifth (1/5 th) where the number of dependant family members exceed six” and “Where the deceased was a bachelor and the claimants are the parents, the deduction follows a different principle. In regard to bachelors, normally, 50% is deducted as personal and living expenses, because it is assumed that a bachelor would tend to spend more on himself”,
4. **Multiplier:** The committee has considered following criteria referring the judgement order of Sarla Verma &Ors Vs. Delhi Transport Corporation &Anr., para 21, “ We therefore hold that the multiplier to be used should be as mentioned in column (4) of the Table above (prepared by applying Susamma Thomas, Trilok Chandra and Charlie), which starts with an operative multiplier of 18 (for the age groups of 15 to 20 and 21 to 25 years), reduced by one unit for every five years, that is M-17 for 26 to 30 years, M-16 for 31 to 35 years, M-15 for 36 to 40 years, M-14 for 41 to 45 years, and M-13 for 46 to 50 years, then reduced by two units for every five years, that is, M-11 for 51 to 55 years, M-9 for 56 to 60 years, M-7 for 61 to 65 years and M-5 for 66 to 70 years”
5. **Expense towards love & affection:** The committee has referred three cases i.e. “Sarala Verma & Ors. Vs Delhi Transport Corporation & Anr”, “Sunita Tokas Vs. New India Insurance Co. Ltd” and “Amrit Bhanu Shali & Ors Vs. National Insurance Co. Ltd. &Ors.” in which the court has taken different view on different cases depending upon the subjective merit of the case for expense towards love & affection.

The amount of expense towards love and affection in the above-mentioned cases

Case	Expense towards love & affection
------	----------------------------------

<i>Sarla Verma & Ors. Vs Delhi Transport Corporation & Anr</i>	<i>Rs. 10,000/- (as loss of consortium)</i>
<i>Sunita Tokas Vs. New India Insurance Co. Ltd</i>	<i>Rs. 2,00,000/-</i>
<i>Amrit Bhanu Shali & Ors Vs. National Insurance Co. Ltd. &Ors</i>	<i>Rs. 1,00,000/- (Rs. 50,000/- to each dependent)</i>

The committee is of the opinion to consider the expenses towards love and affection are 2,00, 000/- per case.

6. **Expense towards last rites:** The committee has referred following three cases as tabulated below and considered Rs. 50,000/- as amount of expense towards last rites

Case	Expense towards last
<i>Sarla Verma & Ors. Vs Delhi Transport Corporation & Anr</i>	<i>Rs. 5,000/-</i>
<i>Sunita Tokas Vs. New India Insurance Co. Ltd</i>	<i>Rs. 50,000/- (Loss of estate & funeral expense)</i>
<i>Amrit Bhanu Shali & Ors Vs. National Insurance Co. Ltd. &Ors.</i>	<i>Rs. 10,000/-</i>

Considering the above methodology, **the committee calculated the compensation amount for the deceased personnel and provided as Table-7 alongwith the compensation as per the Employees Compensation Act, 1923.** The factors considered by the committee is given in Table-8. As shown in table-7, the total amount to be paid to the family of deceased is Rs. 1,74,83,800/-. Against this amount, Rs. 300,000 is paid to each family by the unit. Thus, unit has paid Rs. 1800,000/- as ex gratia/ compensation and balance amount may be accordingly recovered and paid to the families of deceased as per the Table 7.

Table 7 Comparative table of compensation assessed by the Committee and amount paid

Sr. No	Name	Compensation estimated by the Committee	Ex Gratia paid by the Unit	Compensation calculated as per WC Act	Total remaining amount to be paid (compensation estimated by the Committee - Ex gratia paid)
1	Late Parasnath Yadav	1930000	300000	826050	16,30,000
2	Late Bambharoliya Jaydip Prabhudasbhai	3895000	300000	1626825	3595000

3	<i>Late Ratan Kumar Kuswaha</i>	<i>4840000</i>	<i>300000</i>	<i>1574400</i>	<i>4540000</i>
4	<i>LatePrakash Vasava (Ramubhai Vasava)</i>	<i>2142800</i>	<i>300000</i>	<i>1205603</i>	<i>1842800</i>
5	<i>Late Punit Mahto</i>	<i>1294000</i>	<i>300000</i>	<i>961384</i>	<i>994000</i>
6	<i>Late Teerath Gadari</i>	<i>3382000</i>	<i>300000</i>	<i>1596719</i>	<i>3082000</i>

Table 8 Compensation to deceased personnel

Name	DoB	Age	Designation	Salary	% for Future Prospects	Future Prospects	Total	No. family members	No. of Dependents considered	Deduction for personal	personal Expenses	Total expenses	multiplier	No. of months	Multiplier value	Loss of love and affection	Loss of Estate & Funeral Expenses	Compensation
Late Paras nath	1959	62	Operator	30000	0%	0	30000	5	1	0.33333	10000	20000	7	12	1680000	200000	50000	1930000
Late Bambharoliya Jaydip	26.08.19	25	Lab Technician	22500	50%	11250	33750	3	2	0.5	16875	16875	18	12	3645000	200000	50000	3895000
Late Ratan Kumar Kuswaha	10.11.19	29	Operator	20000	50%	10000	30000	5	5	0.25	7500	22500	17	12	4590000	200000	50000	4840000
Late Prakash Vasava	01.01.19	46	HELPER	14000	30%	4200	18200	5	2	0.33333	6066.67	12133.3	13	12	1892800	200000	50000	2142800
Late Punit Mahto	01.01.19	57	HELPER	14500	0%	0	14500	3	3	0.33333	4833.33	9666.67	9	12	1044000	200000	50000	1294000
Late Teerath	21.01.20	22	HELPER	14500	50%	7250	21750	3	3	0.33333	7250	14500	18	12	3132000	200000	50000	3382000

7.0 Other observations based on site visit

- As per PESO 5.1.2 (ix) Fixed foam system or Semi-fixed foam system shall be provided on all tanks (floating roof or fixed roof) exceeding 18 m diameter storing Class A or Class B petroleum. The unit has installed fire hydrant inside the premises. However, **fire hydrant approach near openly stored solvent drums was not adequate. Foam based firefighting system was not observed within the premises during visit.**
- **There were no records of mock drill carried by the unit as emergency response procedure implementation.**
- **Online display board as per CC&A was not observed at the main gate.**
- **The unit has not given operational parameter detail during the explosion event. Past details are also not available.** It may be inferred that plant may have been either operated manually or pressure and temperature details of operational distillation unit were maintained manually.
- Reactor No. 105 was completely destroyed in explosion and reactor no. 104 was significantly damaged and get detached from condenser. From Reactors, it was inferred that there was no provision of either rupture disc or any pressure relief device in reactors (**Photograph-2 & Photograph-3**).
- one shed for materials (finished goods and raw material drum) and open space for raw material (spent solvent) and finished goods storage. Open storage of flammable liquids in large quantity is not safety compliant practice as some of the finished goods flash point is near the summer ambient temperature (less than 45°C).
- There was storage of material inside the shed. But proper upkeep and adequate fire safety arrangement was not available (**Photograph-4**).
- The unit has not attempted to dispose the contaminated soil due to spread of solvents and wastewater on land.
- The labelling of drums kept inside the shed was done with the help of chalk (**Photograph-5**) instead of permanent marking.
- There were damages reported from nearby industry M/s Mane India Pvt. Ltd. worth Rs. 62,54353/- (**Annexure-VII**). The industry has written a letter for recovery/ compensation for damage to the unit.
- CPCB has issued integrated guidance framework for chemical safety on 24.12.2021. According to the guideline, industry was required to carry out safety audit once in a year which was not carried out.
- Color coding for pipelines containing hazardous chemical was not provided which is evident from the pipeline provided with the underground tank.

- ***It appeared that the safety measures available at the unit were never utilized.*** As shown in **photograph-6**, the fire hydrant line is almost completely buried under the ash from boiler and not approachable at the time of firefighting. As shown in **photograph-7**, bird's nest was found in flame arresters indicating that they were never used for their intended purpose.

8.0 Recommendations for avoiding such incident in future

It is very clear that organic solvents either standalone or mixed are flammable. Flash point is further get reduced in closed container. Thus, any organic spent solvent recovery plant should have following measures.

- (i) Any organic solvent/ spent solvent handled should have proper MSDS mentioning flash point, name of incompatibility chemicals, etc. and the same should be known to the plant workers.***
- (ii) Regular training to the worker about process details, process and safety (personnel and plant) is required. Training should include handling emergencies like leakage, abnormal temperature, pressure readings, increased emissions, pump failures, failure of air pollution control devices, shock loads or any other accidents likely to occur due to any activity within the premises.***
- (iii) Emergency preparedness should be reviewed by plant management on routine basis. Mock drills must be conducted atleast in every six month and on induction of any new operator in the plant. For this, a mock drill calendar should be prepared. Mock drill should always be done under supervision of an expert person. Input on Observer on mock drill should be incorporated in emergency plan.***
- (iv) All the pressure containing equipment should have pressure release provision.***
- (v) Every solvent recovery plant should have Supervisory Control and Data Acquisition (SCADA) and Leak Detection and Repair (LDAR) systems.***
- (vi) Seals, glands and gaskets shall be regularly inspected, without dismantling. Leak detectors should be provided for all piping, valves, seals, flanges, and other pertinent equipment.***
- (vii) After each batch of distillation, the entire system should be thoroughly cleaned and inspected before start of new batch. SOP in this regard to be prepared and implemented.***
- (viii) Flow meters, sensors, measuring devices have to be regularly calibrated and all process parameter monitor should have alert/ siren system.***

- (ix) All pipework containing hazardous chemicals shall be identified by colour coding or labelling (as per standards notified by Bureau of Indian Standards) and shall be protected to prevent corrosion / damage. The practice to identify the parts of the system that contain gas or liquid and the direction of flow should be followed.**
- (x) The distillation units shall install double valve system for taking samples during the process to minimize air ingress and provide interlocking arrangement for critical process parameter to shut down the process and/ or inject coolant in place of heat on reactor jackets.**
- (xi) Flame arrestors, water curtains and adequate fire safety arrangements (fire hydrant, foam system, etc.) shall be installed. Spark / flame proof electrical fittings shall be installed.**
- (xii) In no case any unit should be allowed to store petroleum class A or class B or Class C in open to sky area.**
- (xiii) Suitable gas and VOC sensors alongwith alarm system should be installed in the unit at appropriate locations.**
- (xiv) A system should be established having brief of operation done in a shift, no. of batches charged, product manufactured and problems encountered or suspected.**
- (xv) After every training, training effectiveness should be evaluated for Operational Negligence, Operator fault, Lack of standard operating procedure for transfer of material from one reactor to another and on cleaning of reactors, lack of awareness of personnel on SOP's, non-compliance of SOP's by employees, Noncompliance of safety practices by employees, etc. For this purpose, training calendar and training feedback record should be maintained. Sensitization of workers for SOP adoption should be carried out and day-to-day practices regularly checked and record should be maintained.**
- (xvi) The Regulatory Authorities shall take immediate action against erring industries as per prevailing Rules based on periodic inspections. In addition the Regulatory Authorities shall sensitize the industries about safety norms, industrial best practices, industry specific emission & effluent standards etc.**
- (xvii) Plant should be thoroughly inspected by the plant management regularly for short bolting, flange tightening, less number of nuts and bolts than required or designed, firefighting and plant personnel should be cross-checked for chemical stock, understanding of compatibility matrix of chemicals/ spent solvents, etc.**
- (xviii) The manpower of the DISH in the industrial area must be commensurate with the numbers of units in the area with proper training to improve the efficiency of DISH.**
- (xix) Annual safety audit from third party should be made mandatory for every plant and fire adequacy certificate should be made mandatory before operation of distillation plant.**
- (xx) Distillation plants should have safe assembly points with signage, signage for safety evacuation and double staircase**

(opposite to each other) for exiting from process area in case of emergency.

9.0 Actions taken by the Chief Secretary in similar matters

A meeting was convened by Hon'ble Chief Secretary with various stakeholder departments and set of decisions were taken for the compliance of various orders of Hon'ble NGT in similar matters. The minutes of the meeting is attached as **Annexure-VIII**.

10.0 Observations of the Committee with respect to tasks assigned by Hon'ble NGT

Task assigned	Observation of the Committee
Whether the unit was holding mock drills	No. No mock drill evidence is available with the unit. Thus no mock drill exercise was practiced. As per onsite emergency plan page No. 35 (Annexure-IX), one mock drill in a year was required and as per CPCB guidelines (Annexure-X), mock drill should be conducted atleast at an interval of 6 months.
Whether onsite and offsite emergency plans was prepared by the unit	Yes. Onsite emergency plan is prepared by the unit. However, the onsite emergency plan is more inclined towards communication during emergency rather than tackling emergency. The control measures for hazard control mentioned in onsite emergency plan like rupture disc, emergency shut down procedure, dyke wall, etc. were not provided by the unit.
Whether the unit has taken insurance policies and liability policies	<ul style="list-style-type: none"> • Unit has taken workman compensation policy from IFFCO TOKIO GENERAL INSURANCE COMPANY LIMITED, Policy No.43251397 for the period 21/01/2022 to 20/01/2023 (Annexure-XI). • Unit has taken Public liability Insurance policy from Future General India Insurance Company Ltd. having Policy no: L0158783 which was expired on 01.06.2022 i.e. on the date of accident, it has valid PLI (Annexure-XII).
Whether the unit was having valid CTO and Authorizations under the Environment (Protection) Rules, 1986.	Yes. The unit has valid authorisation from GPCB vide CC&A order No. AWH-109868 valid till 27/08/2025 (AnnexureXIII). However, CC&A conditions were not fully complied with. The non-compliances observed are excessive storage of materials in drums in open area, data display board at main gate, etc.

<i>Visit of the Committee to the site to ascertain the cause of the incident</i>	<i>There was technical flaw in distillation system. Which may have resulted in fire spread and explosion and fire spread in upto the solvent storage area.</i>
<i>Extent of loss to living beings due to explosion and fire</i>	<i>As per the Police (Annexure-II), 06 plant personnel died during explosion and fire. Two boiler operators working outside the distillation plant were saved. Entire distillation plant was damaged.</i>
<i>Extent of loss to the environment</i>	<i>The loss to the environment was due to emission of gases from fire, loss of water in firefighting, release of volatile compounds, and contamination of soil due to spread of firefighting water mixed with spilled organic materials. No wastewater contamination to any water body is envisaged. It is estimated stoichiometrically that 9934.6 kg solvents vapourised as VOCs, 200812.2 kg CO₂ and 7242.6 kg NO₂ is emitted in atmosphere. Based on records of firefighting agencies, it is estimated that 133.1 KL water and about 1.0 KL foam was used in firefighting which was spread on ground and contaminated the soil alongwith solvents/ organic chemicals. GPCB analysis report of accumulated wastewater and contaminated soil is attached as Annexure-III.</i>
<i>Environmental compensation required</i>	<i>A total of Rs. 50.99 lakh is calculated for damage due to gaseous emission in air and Rs. 120.16 lakh is calculated for environmental damages to water and soil. Thus the total environmental compensation is Rs 171.15 lakh to be recovered.</i>
<i>Amount of compensation required and paid to the deceased person</i>	<i>The total amount of compensation is Rs. 1,74,83,800/- as per Table-7. Rs. 3.0 Lakh is paid to the family of each deceased member by the unit.</i>
<i>Persons responsible for the accident</i>	<ul style="list-style-type: none"> • <i>The visiting team could not observed/ found rupture disc or pressure relief valve on Reactor No.104</i> • <i>The unit has not provided SCADA based system for alert on any deviation in operational parameter during operation.</i> • <i>The unit has not adopted safety practices properly.</i> • <i>The unit has not provided desired firefighting arrangement in manufacturing area.</i>

	<ul style="list-style-type: none"> • The available fire hydrants were buried under fly ash of boiler which reveals that the same is not well maintained. • The solvent storage shed was not having adequate firefighting system. • It was understood from CCTV footage and eye witness that the plant personnel started troubleshooting. <p>Hence the plant management is responsible for such accident.</p>
Identification of steps to prevent such incident in future.	A set of recommendations are given in para 8.0.

11.0 Conclusion

A fatal blast and fire accident happened at M/s Om Organic, Dahej on 11/04/2022 which caused death of 06 workers of unit. Hon'ble National Green Tribunal (NGT) took up the matter suo moto vide original application no. 272/2022(WZ) and constituted a joint Committee vide order dated 12.04.2022 to submit a report on the accident. The accident took place in Reactor No.105 when distillation for dimethyl formamide recovery was taking place. The accident happened at about 00: 47 hours and the fire was controlled after about 04 hours. From the circumstantial evidence it is inferred that fire may have caused due to addressing leakage of fumes when the plant was operational which may have triggered thermal decomposition of dimethyl formamide in reactor No. 105 resulting in increase in pressure in reactor followed by blast and fire.

The accident led to death of 06 workers of the unit, destruction of large amount of raw material and product causing severe damage to environment, destruction of Reactor No. 105 and Reactor No. 104 and damage to the nearby industries.

It is estimated that 9934.6 kg solvents vapourised as VOCs, 200812.2 kg CO₂ and 7242.6 kg NO₂ is emitted in atmosphere. Based on records of firefighting agencies, it is estimated that 133.1 KL water and about 1.0 KL foam was used in firefighting which was spread on ground and contaminated the soil alongwith solvents/ organic chemicals. A total of Rs. 50.99 lakh is calculated for damage due to gaseous emission in air and Rs. 120.16 lakh is calculated for environmental damages to water and soil. Thus, the total environmental compensation is Rs171.15 lakh (Rupees One crore seventy one lakh and fifteen thousand) to be recovered.

Total of Rs. 1, 74, 83, 800/- (Rupees Once Crore Seventy four lakh eighty three thousand eight hundred) is calculated as compensation to the family members of deceased persons. Rs. 3.0 Lakh is paid to the family of each deceased. Balance amount of compensation may be paid to the family of deceased. The committee opines to pay higher amount among the two to the family of deceased workers.

*It is well understood that organic spent solvent distillation is a critical process which requires well trained manpower, machineries equipped with safety features and provisions for warning and firefighting. **Such safety aspects should be reviewed by the Competent Authorities from time to time and safety audit, mock drills, periodic training of personnel, etc. should be conducted. All the equipment deployed for process monitoring should be regularly calibrated. The onsite emergency plan review system should be developed and its Implementation to be ensured.***

4. We have considered the matter with the assistance of learned Counsel for the State PCB. None has chosen to appear for the PP with whose representatives the Committee interacted and who was put to notice of the proceedings in terms of order of this Tribunal referred to earlier.

5. The fact-finding report submitted by a responsible Committee of statutory authorities shows that blast occurred due to increase in temperature, due to fire triggered from spark. There was failure of the PP in following the safety norms. The heirs of the deceased are entitled to compensation as recommended by the Committee based on loss of income and the period of loss, having regard to age of the deceased. Further, the PP was liable to pay compensation for the damage to the environment. The PP has violated environmental norms particularly those laid down under the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 under the EP Act. Even otherwise, liability of the PP is absolute as held inter alia in MC Mehta, (1987) 1 SCC 395. The report also mentions steps taken in pursuance of earlier orders of the Tribunal requiring the Chief Secretary, Gujarat to coordinate compliance of safety norms to prevent frequent fatal incidents during operation of such units.

6. In view of above, in absence of any reason not to do so, we accept the report and direct further remedial action in term of compliances,

adoption of safeguards to prevent recurrence of such incidents in future, recovery of compensation for damage to the environment and loss of lives and disbursement of compensation to heirs of the deceased. Till recovery of compensation, the unit may not be allowed to restart. Compliance may be ensured by the Chief Secretary, Gujarat through concerned officers. The Chief Secretary, Gujarat may hold a follow up meeting on or before 31.10.2022 to satisfy himself that the recommendations have been duly complied with.

If any grievance survives, it will be open to aggrieved party to move this Tribunal. The application is disposed of.

A copy of this order be forwarded to the Chief Secretary, Gujarat, MoEF&CC and CPCB by e-mail. The CPCB may forward the recommendations, particularly those in para 8 of the report to all the States/UTs for compliance by such units.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

Prof. A. Senthil Vel, EM

August 29, 2022
Original Application No.272/2022
A