

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

Original Application No. 85/2020
(Earlier O.A.No.22/2020 (WZ))
(I.A. No. 364/2020)

Aryavart Foundation through its President Applicant(s)

Versus

Yashyashvi Rasayan Pvt. Ltd. & Anr. Respondent(s)

WITH

Original Application No. 24/2020 (WZ)

Rameshbhai Bhagvanbhai Machhi and Ors. Applicant(s)

Versus

State of Gujarat & Ors. Respondent(s)

Date of hearing and reserving of order: 27.01.2021

Date of uploading of order: 03.02.2021

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

ORDER

1. Proceedings in this matter arise out of an incident dated 03.06.2020 at Dahej, District Bharuch, Gujarat. Version of the applicants is that a massive blast took place in chemical factory run by respondent No.1, Yashyashvi Rasayan Pvt. Ltd. ("The Company") on account of a fire in the storage tank of the factory. The factory is manufacturing several hazardous chemicals, including Methanol and Xylene, which find mention in the Schedule to the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 (The 1989 Rules) resulting in deaths, injuries, displacement of inhabitants and damage to the property. As per relied

upon media reports, bodies of some of the workers inside the factory were charred beyond recognition. About 4800 inhabitants of the nearby villages had to be moved to safer place¹ on account of the incident. The company has revenue in the range of Rs. 100 crores for the year ending 31.03.2018.² According to the applicant, the Company is owned by the Patel Group, having large financial resources.

2. As per report furnished to this Tribunal, by the Committee of experts, the number of deaths in the incident is 11. Victims with grievous injuries are found to be 22, with simple injuries 28 (leading to hospitalisation) and with minor injuries 43 (who were not hospitalised)³. Houses damaged due to blast have been found to be 375⁴ and persons shifted/displaced on account of apprehended danger are 3241⁵. Damage has also been found to the air and water⁶ in the vicinity. Detailed reference to the facts, as found by the Committee constituted by this Tribunal, will be made in the later part of the judgment.

3. This application has been filed by an NGO, located at Surat. The applicant has also referred to another recent shocking incident of 07.05.2020 in the factory of L.G. Polymers India at Vishakhapatnam where 12 persons died and several others were injured. It is stated that on 08.05.2020, the Central Pollution Control Board (CPCB) issued a circular requiring all the State PCBs to undertake safety audit of industries before they reopened after the COVID-19 situation. The industries dealing with hazardous chemicals were required to ensure that all safety protocols are followed and requisite equipment is operationalized and manpower is duly

¹ <https://indianexpress.com/article/cities/ahmedabad/gujarat-dahej-chemical-factory-fire-deaths-6441590/>

² <https://www.tofler.in/yashashvi-rasayan-private-limited/company/U24119GJ2003PTC041827>

³ Para 82 of the report of the Committee

⁴ Para 83 of the report of the Committee

⁵ Para 83 of the report of the Committee

⁶ Para 80 of the report of the Committee

trained for handling such chemicals. On 11.05.2020, Maharashtra State PCB issued an identical circular specifically requiring the hazardous and chemical handling units to provide information with regard to onsite and off-site emergency plans, safety audit reports and action taken in pursuance of such report. It is stated that the company failed to follow requisite precautions and safety protocols. The company is thus strictly and absolutely liable for the damage caused to the human lives, human health, property and the environment in violation of environmental norms, particularly the mandate of the 1989 Rules and the Chemical Accidents (Emergency, Planning, Preparedness and Response) Rules, 1996 (1996 Rules) and the circular issued by the CPCB.

4. The matter was first heard on 08.06.2020, after advance notice to the concerned parties. Finding, *prima-facie*, failure of the Company and the statutory authorities, the Tribunal passed an interim order of compensation to the victims, pending report of a fact-finding Expert Committee, headed by Justice B.C. Patel, former Chief Justice of Delhi High Court. The observations in the said order are:

“1to3.....xxx.....xxx.....xxx

4. It is undisputed during the hearing that the company is engaged in the manufacture of hazardous chemicals and is covered by the 1989 Rules and the 1996 Rules. It has to prepare and follow onsite and off-site emergency plan which is required to be duly audited and overseen by the statutory authorities including the Chief Inspector of Factories (CIFs), Department of Industries, the District Magistrate, the State PCB and the Petroleum and Explosives Safety Organization (PESO). Overall regulatory framework is under the Ministry of Environment, Forest and Climate Change (MoEF&CC). Liability of the Company is strict and absolute for the loss caused by its activities. Dependents/heirs of the deceased as well as the injured persons, the persons displaced on account of the incident have to be duly compensated. The company has also to bear the cost of restoration of the environment.

5. We may also have to examine the failure of the concerned statutory authorities in taking necessary preventive and safety measures.

6. While the company and other concerned have to be given due opportunity, **an interim direction for compensation on the basis of available material cannot brook any delay. Interim compensation can be awarded on conservative subject to final compensation being determined later. While no compensation for death or injury or displacement may be adequate and environment is priceless, having regard to facts and circumstances and on ad hoc basis, we assess interim compensation for death to be 15 lacs each (taking into account multiplier of around 16 and loss of earning of about one lac a year, taking the minimum wage, apart from conventional sums), for grievous injury Rs. 5 lac per person, for other injuries of persons hospitalized Rs. 2.5 lac per person and for displacement at Rs. 25000/- per person. The company may make an interim deposit of Rs. 25 Crores excluding the deposit/payment already made in pursuance of order of the GPCB or otherwise or under the Workmen's Compensation Act, 1923 or any other statutory provisions or ex gratia in relation to the present incident. Disbursement may be made by preparing an appropriate plan by the District Magistrate in consultation with the District Legal Service Authority, Bharuch to be overseen by the Member Secretary, State Legal Service Authority. The amount may be deposited within 10 days from today. Disbursement may be made within one month thereafter.** If the company fails to make the deposit, the State will be at liberty to recover the same by coercive methods but the disbursement may in such case be made out of the State funds within one month with right of the State to recover the amount from the company.

7to11xxx.....xxx.....xxx

12. Having regard to the facts and circumstances of the present case and in the light of material available on record and without prejudice to further opportunity being given to all concerned, we find it necessary to issue following directions:

a) The Company may deposit an amount of Rs. 25 crores, minus the statutory compensation/ex gratia payments already made to the victims, if any, with the District Magistrate, Bharuch within 10 days from today.

The amount may be disbursed by the District Magistrate by making disbursement plan in the manner already indicated above (Para 6). Disbursement plan may consider safeguards to ensure that amount reaches the beneficiaries and is not misappropriated by any intermediary.

b) We constitute a 6-member Committee comprising:

(i) Justice B.C. Patel, former Chief Justice, Delhi High Court and former Judge of the Gujarat High Court presently stationed at Ahmedabad - Chairman

(ii) Representative of MoEF&CC – Member

(iii) Representative of CPCB – Member

- (iv) Head of the Chemical Engineering Department of the IIT Gandhinagar - Member
- (v) Representative of NEERI - Member
- (vi) Representative of National Institute of Disaster Management, IIPA Campus, New Delhi – Member

The District Magistrate, Bharuch and GPCB will provide logistic support to the Committee to enable their fact-finding and reporting. The Committee will be at liberty to take assistance of such experts, individuals and institutions as may be considered necessary

c) **The Committee may visit and inspect the site within 7 days** and give its report within one month thereafter via email judicial-ngt@gov.in, (preferably in the form of searchable/OCR PDF and not image PDF). The Committee may specifically report:

- i. **The sequence of events;**
- ii. **Causes of failure and persons and authorities responsible therefor;**
- iii. **Extent of damage to life, human and non-human; public health; and environment – including, water, soil, air;**
- iv. **Steps to be taken for compensation of victims and restitution of the damaged property and environment, and the cost involved;**
- v. **Remedial measures to prevent recurrence;**
- vi. **Any other incidental or allied issues found relevant.**

CPCB will be the nodal agency for coordination.

If any member is unable to visit physically, he may be associated online with the permission of the Chairman. The Committee may provide opportunity of being heard to the Company as well as any other member of the public.

A copy of the report may be uploaded on the website of the CPCB and also provided to the Company for its response.

d) It will be open to the concerned authorities to act on the recommendations of the Committee to the extent the authorities find viable in exercise of their statutory powers pending further orders of this Tribunal.

e) **The Committee may as far as possible make final quantification of compensation and also prepare a restoration plan in association with the District Magistrate, Bharuch. For the restoration plan, the nodal agency will be the representative of MoEF&CC.**

f) The Chief Secretary, Gujarat may identify and take appropriate action against persons responsible for failure of law in permitting the Company to operate without statutory clearances within two months and give a report to this Tribunal.

g) In view of the stand of the State PCB that the order of closure has been passed, before recommencing any operations, the Company

may bring it to the notice of this Tribunal, so that it can be ensured that there is no violation of statutory provisions and safety measures.

13...xxx.....xxx.....xxx

14. Since this tragedy follows so close on the heels of a similar one (in Vizag), it may be necessary to ensure that risk studies are duly undertaken by all industries in the country dealing with the hazardous chemicals and their on-site and off-site plans are operational and mock drills are carried out for testing the same. The State PCBs, concerned District Magistrates, CIFs of the Industries Departments may ensure the same and the nodal agency for the purpose will be the State PCBs, which may be monitored by the CPCB in an appropriate manner.

15. Since a direction has already been issued to the MoEF&CC to constitute an Expert Committee on the subject of revamping the monitoring mechanism to check and prevent violation of environmental norms and occurrence of such incidents in future particularly in establishments dealing with hazardous chemicals and a special drive may be initiated, no separate direction is necessary but this incident may also be kept in mind by the Expert Committee constituted in pursuance of order dated 01.06.2020.”

5. The Company in question filed Civil Appeal No. 2629/2020 against the order of this Tribunal dated 08.06.2020 which was disposed of on 22.06.2020 as follows:-

“Heard Mr. Harish Salve, learned senior counsel appearing for the appellant. He has very fairly stated that with respect to payment of compensation of Rs. 15 Lakhs by way of interim compensation on account of death, the appellant has no objection. Similarly in case of grievous injuries, Rs. 5 Lakhs per person, they have no objection. And with respect to Rs. 2.5 Lakhs towards injuries caused to the persons hospitalised, they have no objection to deposit the amount, as ordered by the National Green Tribunal (NGT). However, with respect to the displacement of 4800 persons, compensation of Rs.25,000/- (Rupees Twenty Five Thousand) per person has been ordered. **It is submitted that there might have been displacement of persons only for few hours and therefore, the compensation awarded is on a higher side. It is not necessary to award the compensation in such a case of displacement of persons only for few hours. Moreover, the Tribunal has passed the order only on the basis of newspaper reports.**

After hearing the learned counsel for the appellant at length, we feel that it is a fit case in which the appellant should approach the NGT itself for modification of the order stating the fact in detail as to how many persons were displaced and for how much period.

We request the Tribunal to reassess the compensation, if necessary, in the light of the data to be placed before it. **It is made clear that**

we have not commented on the merits of the case while passing the order.

Ten days' time is granted to make the payment. The disbursement of the amount to the displaced persons shall remain stayed till a fresh decision is taken by the NGT.

The appeal is disposed of accordingly.”

(emphasis supplied)

6. In pursuance of the above, the Company filed I.A. 237/2020 which was disposed of by this Tribunal on 30.07.2020 as follows:-

“1to3...xxx.....xxx.....xxx

4. *Main ground for seeking modification of order of this Tribunal is that the persons displaced were brought back to their homes on the very same day, no damage was caused to their person or property and there was no permanent migration. Only basis of order of the Tribunal is media report and the applicant has not got opportunity of being heard. It is further stated that the compensation is excessive. According to the said applicant, a sum of Rs. 2.92 crores has been deposited on 29.06.2020, apart from Rs. 18 Lakhs deposited on 03.07.2020. Prayer is to recall direction to pay the remaining amount of Rs. 22.075 crores.*

5. *We do not find any merit in the prayer of the applicant. The order dated 08.06.2020 was passed after hearing the parties. The facts mentioned in the order remained undisputed after opportunity to the applicant before passing interim order, pending giving further opportunity in due course. The order is not based on media report alone, as wrongly submitted. The order was passed after preliminary verification of facts and after notice to the present applicant. Even now, neither the incident is disputed nor lack of adequate safeguards as per statutory mandate are disputed. Statutory Onsite and Offsite plans and their compliance are not shown. Liability of the applicant is absolute and compensation payable has to be deterrant. It is wrong to assume that there is no liability for displacement for 10-12 hours, unless the victims are forced to permanently migrate or that interim payment awarded to the heirs of the deceased and to the injured is not to be increased finally. It is also wrongly assumed that nothing is to be spent for restoration of the environment. The applicant has filed a certificate from Panchayat that the displaced persons were brought back to their residence late night. While authenticity of the certificate is yet to be examined, the affected persons certainly faced trauma, stress and inconvenience in being displaced from their respective houses on account of hazardous activities of the unit in question for which liability cannot be disowned. **The occurrence admittedly took place at 12 noon and displacement atleast till late night for atleast 10-12 hours, even as per showing of the applicant. During this period, the affected persons faced trauma, displacement from their houses and all consequential problems. It is too much to contend that they are not to be paid any compensation and such displacement does not cause any***

physical or mental harm to a person. In our view, such displacement is certainly actionable wrong and any commercial establishment engaged in hazardous activity for commercial purpose is certainly liable to compensate such displaced persons. Displacement was at large scale creating anxiety, fear, trauma, and misery. Some families may have minor children or senior citizens, females who certainly are bound to greatly suffer by such large scale and sudden displacement from their houses. Exact damage is to be fully ascertained but even as per conservative estimate, the amount of compensation of Rs. 25,000/- to each displaced person cannot, in our view, be held to be excessive, even on further consideration. There is no golden scale to measure such loss and a reasonable estimate has to be the basis.”

7. In pursuance of order dated 8.06.2020, the six Member Committee has filed its report dated 06.08.2020, followed by an additional report on the subject of environmental damage due to air pollution, filed on 24.09.2020. The Company has filed I.A. No. 364/2020 seeking modification of orders dated 08.06.2020 and 30.07.2020, to reduce the requirement of depositing the amount of Rs. 25 Crores and instead to permit the deposit of Rs.1,29,14,616/-, in addition to amount of Rs. 3,10,00,000/- already deposited. In the application, the Company has raised objection to the assessment of the compensation by the Committee beyond the above amount. The Chief Secretary, Gujarat has filed report dated 26.11.2020 to the effect that the Company did not have the requisite licence from the PESO. The MoEF&CC has filed its affidavit on 23.11.2020. The GPCB has filed its comments on the report on 25.01.2021. There is a report of the District Legal Services Authority (DLSA) dated 31.07.2020 with regard to steps for disbursement of part of compensation. I.A. No. 50/2020 has been filed on 12.07.2020 by Rameshbhai Bhagvanbhai Machhi and four others, representing the Fishermen, seeking compensation of Rs. 1,01,06,000 for the loss of livelihood on account of the above incident. They have also filed a separate O.A. No. 24/2020(WZ) for the same relief.

8. We have heard learned counsel for applicants, the Company, the CPCB and the GPCB and perused the records.

9. We may first refer to the report of the six Member Expert Committee, headed by Justice B.C. Patel, former Chief Justice of Delhi. The Committee visited the site and the surrounding areas, held public hearing, interacted with the Directorate of Industrial Safety & Health (DISH), Petroleum and Explosives Safety Organization (PESO), GPCB, District Magistrate, Police and the Company representatives. It has made observations about the location of the unit and the nearby villages, activities of the Company and given its report about the terms of reference i.e.: -

- (i) *The sequence of events;*
- (ii) *Causes of failure and persons and authorities responsible therefor;*
- (iii) *Extent of damage to life, human and non-human; public health; and environment – including, water, soil, air;*
- (iv) *Steps to be taken for compensation of victims and restitution of the damaged property and environment, and the cost involved;*
- (v) *Remedial measures to prevent recurrence;*
- (vi) *Any other incidental or allied issues found relevant.*

10. The report being voluminous, it will be appropriate to reproduce extracts, relevant for the purpose of this order: -

“8. A company known as Safe Process Engineering Pvt Ltd, having its office at Western Business Park, Vesu, Surat with a team of its engineers visited the unit and after inspection of the unit submitted Safety Audit Report of the unit on 14th March, 2020. Which is in detail.

*9. The unit has 11 underground tanks **for storage of Methanol, recovered, Xylene and Diesel. The unit has 14 tanks on ground to store Sulphuric acid, Sodium hydroxide, Potassium hydroxide, Nitric Acid, O.D.C.B., D.C.N.B., Dichloro Aniline, Dimethyl Sulphate, Sulphur dioxide, Carbon Dioxide (Gas). It has a hydrogen bank, two-storey hydrogen cylinders on vehicles. There are different methods for the product produced by the unit.***

10. The manufacturing process of this unit falls under item No. 17 and 18 of the First schedule of the Factories Act, 1948 and the nature of the manufacturing process falls under section 2 (cb) of the said act. **The unit is engaged in process which is “Hazardous Process”.** Provisions contained in Chapter 4- A of the Factories Act, 1948 and Rules 68-K to 68-Y of the Gujarat Factories Rules, 1963 would apply. In view of certain chemicals used, Rule 68-J of the Gujarat factories Rules 1963 will be attracted and in view of this also **the unit is using” Hazardous Chemicals”.** **The unit is engaged in hazardous process** listed at serial No. 17, 80 and 29 of the 1st schedule of the Factories Act, 1948 and therefore, not only the manufacturing process is required to be carried out strictly in a scientific method, but is **also required to observe certain norms very strictly as prescribed by the authorities even while receiving Hazardous Chemicals.** **The unit is thus classified as a MAH (Major Accident Hazard) Installation.** In view of the use of various chemicals, Schedule 12 and 19 of Rule 102 of the Gujarat Factories Rules, 1963 will apply and the unit is required to provide, housekeeping, prohibition on the use of food at workplace, authorised entry, examination of the instruments and safety devices, facility for isolation, protective equipment, test, examination and repair of plant equipment with permit for entry into or work in confined spaces and PTW system and all the requirement for prevention of fire and explosion as applicable. In the activities being undertaken in the unit (Welding/cutting Operation with the use of LPG/Acetylene/Argon), the Rule 102 of the Gujarat Factories Rules, 1963 is required to be complied with. The provisions contained in the aforesaid Act and Rules, including sections 28, 29, 30 and 31 and Rules 58, 59, 60 and 61 being applicable, the unit has to strictly follow all the provisions and mandatory Forms No. 9,10 and 11 has to be maintained.

11. The Chemical Accidents (EPPR) Rules 1996 are applicable in view of the quantities of the hazardous chemicals stored more than the threshold quantities indicated in the Rules. In view of this, the unit is classified as MAH installation units and should become a member of the Local Crisis Group and District Crisis Group of Off-site Emergency Plan made for the local area and the District area.

12. In view of the boiler being used by the unit, the provisions contained in the Boilers Act, 1923 and the Gujarat Boilers Rules, 1966 are applicable. In view of the use of hazardous chemicals being used by the unit, when the hazardous chemicals brought through tankers, the unit is required to see that Rules 129 to 137 of the Motor Vehicle Rules, 1989 are complied with. **There is a mandatory provision to display the prescribed class of labels for the chemical, techno graph on motor vehicle, use of spark arrester etc should be complied with.** **The unit has to see that the tankers with requisite markings are allowed to enter the unit premises.**

13. The provisions contained in the Petroleum Act, 1934 and the Petroleum Rules, 2002 are applicable to the unit as the unit is storing in bulk Petroleum Class A and Petroleum Class B in bulk. In view of the use and storage of Carbon Dioxide, the Static and Mobile Pressure Vessel (unfired) Rules are also made applicable to the unit. **As per the report, the unit is using Sulphur dioxide, a toxic gas, the**

unit is also governed under the Gas Cylinder Rules, 2016. For storage and use of any chemical or gas filled in cylinder, the unit must have license from appropriate authority for the use and storage of the cylinders. In view of Hazardous material being used by the unit, the unit is also governed by the provisions contained in the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989.

FOR COMPLIANCE IN VIEW OF SAFETY REPORT

14. In the safety report for the safety release valves, unit is asked to have a tag with the information such as SR V ID. Set pressure, Test date, Due date. So far as the liquid tank farm and PESO area are concerned, the report indicates that the unloading hoses were not tagged with the names of the chemicals and the unit was asked to use the hoses with a label showing the name of a chemical. It also recommended to provide proper drainage at the safety shower in this area. In the laboratory area the PPE metrics was not available for different activities performed in the laboratory and handling of various chemicals. At gas cylinder station area normal tools and spanners were being used falsely and installation job and ordinary lighting fixture and switchboard was installed inside the gas cylinder station area. For these, it has been pointed out to prepare proper PPE metrics for handling various chemicals and different activities performed on various machine and instruments in the laboratory, only non-sparking tools and spanners to be used for gas cylinders installation job and flameproof lighting fixture and switchboard be installed the gas cylinder station area.

16. About tanks storage vessel area, it is reported that flame proof fittings are provided. It is also stated that the storage vessels are bunded/dyked and the capacity of the same is 110%. The vessels have been isolated through valves and fitted with remotely controlled isolation valves. The vessels are provided with emergency vent, relief valve, busting disc, level indicator pressure gauge and overflow line. It is also stated that the vessels are provided with alarms for high-level, high temperature and high pressure. There are standby empty tanks provided for emptying in emergency. So far as the on-site gas cylinder storage area is concerned for the storage of Hydrogen and SO₂, it is reported that weathered licences were available for storing these cylinders.

17. So far as the tank farm is concerned, a drawing is placed in the report along with the distance between the different tanks. The same is annexed herewith and Mark Annexure 5, The row of 7 tanks in front and 7 tanks behind that, in all 14. Between the tanks of Di Methyl Sulphate and Nitric Acid there was only one tank. If the Nitric acid would have been stored away the eventuality could have been

avoided. It was known that the Nitric acid and DMS are incompatible and therefore, the authorities i.e. DISH, granting permission for tank farm ought to have realised and should not to have allowed storage at the same place of incompatible Acids.

18. From the nature of the safety audit report i.e. discrepancy in dates, absence of seal of the company, report submitted within a one day, multiple/duplicate documents, absence of continuity of pagination warrants a caution.

SECTION 4

MAJOR ACCIDENT REPORT AND OTHER REPORTS

19. So far as the incident is concerned, the Deputy Director DISH made an order under section 40 (2) of the Factory Act, 1946 on 3rd June, 2020 indicating about his visit to the site with other officers and pointing out that 6 dead bodies were found in the unit itself in about 52 employees suffered due to injury. The injured were shifted to different hospitals as indicated in the report. The report is in detail and the occupier/factory manager has been prohibited to use any plant, place of the factory premises for manufacturing process until completion of the corrective actions. The report is annexed here with Mark Annexure 6. As a matter of fact, there is no question of taking corrective action and strengthening the machinery / plant as such an order is in consonance with subsequent order made on 10th June and the orders made by other authorities including GPCB. There is a Major Accident Report about the accident having taken place on 3rd June, 2020 at about 12:10 hours. **The report indicates that prima facie on account of mishandling of chemicals in storage tank farm the incident took place.** Major Accident Report dated 9th June, 2020 submitted by the unit as per schedule VI under Rule 5 (1) of MSIHC Rules is annexed with this report and is marked as Annexure 7. However, it was not submitted within prescribed time of 48 hrs. It appears that after receipt of this report the Deputy Director, Industrial Safety and Health made an order on 10th June, 2020 directing the occupier/factory manager under section 9 (F) of the Factories Act to keep the situation in the factory as existing. The said order is annexed herewith Mark Annexure 8. The Major Accident Report issued by the GPCB dated 3rd June and **the order of closure of the unit dated 4th June, 2020 made by the GPCB are annexed here with.** The GPCB also filed a complaint in the court of competent jurisdiction for the offences, punishable under section 7, 15, 16 and 19 of the Environment Protection Act 1986. The offences being non-cognizable, the complaint was required to be filed before the court of competent jurisdiction. The copy of the Major Accident Report, closure order and the complaint filed by the officer of the GPCB are annexed here with Mark Annexure 9.

20. After the incident, Regional office staff led by Shri F. M. Modi (GPCB) reached the place within a period of one hour, 1) Sub Divisional Magistrate, 2) Deputy Superintendent of Police, Inspector of Police and his team, 3) Officers of DISH, 4) Officials of GIDC, 5) Officials of Dahej Industries Association, 6) Officials of Vilayat Industries Association, 7) Officials of SEZ and 8) Mamlatdar, Vagra were present at the site.

21. So far as the environmental issue is concerned, it is stated that they **Heavy Volatile Organic Compounds (VOC) emission in prevailing wind direction (SE to NW) towards M/S LNG Petronet Ltd, Hindalco industries and Adani Petronet Port Ltd was noticed. There was generation of contaminated water during firefighting operation. The Gujarat Pollution Control Board, (hereinafter referred as “the GPCB”) monitored Ambient Air Quality by Respirable Dust Sampler (RDS) and also VOC by Handy VOC meter. It also collected sample of contaminated water.** The reports in this behalf are annexed herewith collectively and marked as Annexure 10. On information about the air quality and chances of disaster on account of storage of hydrogen, SO₂ cylinders and solvent storage nearby was conveyed to the District Administration, the process of evacuation was initiated. **District authorities evacuated around 4800 people from nearby two villages (village Luvara and Lakhigam) for precautionary measures. Later on, Mamlatdar, Vagra addressed to the Collector along with the list of the persons intimating that from village luvara 1648 and from village Lakhigam 1593 persons, totalling to 3241 persons were shifted for their safety on account of apprehended danger.** The said list is annexed herewith collectively marked Annexure 11.

22. (1) **The Report indicates the chemicals involved in the incident were such as Ortho Dichloro Benzene (ODCB), Dichloro Nitro benzene (DCNB), Dimethyl Sulphate (DMS), 2,5 Dichloro Aniline (DCA), Nitric Acid, Caustic Potash.** (2) There were hydrogen cylinders mounted on the trailers near incident site. There was burning of tyres of the trailers however, there was no impact on the hydrogen cylinders on account of timely action and swiftly control of a fire, (3) Nearby storage: methanol, Xylene and DiCaMba were stored however, the same were not affected on account of fire. According to the report the fire was completely extinguished, smoke emission almost stopped and the situation was under control at about 16:15 hours.

SECTION 5

THE PROCEDURE FOR UNLOADING THE TANKER

24. There is sufficient material on record to conclude that on 2nd June, 2020 the two tankers, one containing Nitric Acid and the other

Di Methyl Sulphate (hereinafter referred as 'the DMS') entered the premises for delivery of the said chemicals.

(As per the procedure followed, the arrival of material is to be first recorded in the inward register of Yashashvi Rasayan Pvt Ltd, (hereinafter referred as "the unit"). The tax invoice issued by Industrial Solvent & Chemicals Pvt Ltd, the supplier of DMS (24.9 MT/24980 Kgs/19.03 KL) dated 01-06-20 with the stamp of Dahej SEZ Ltd, Part II indicates the tanker having checked and passed through check post at 18:00 PM on 01-06-20. There is an entry no 504 in the inward register maintained by the unit indicating that the tanker No GJ 16 AV 1462 entered the Unit on 02-06-20 at about 10:45 AM. The entry is recorded in the register mentioning the Inward No., Date, SEZ inward No., & Date, Description of Material, Quantity/Weight, Bill No./Challan No. & Date, Name & Address of Supplier, Vehicle No, Delivery by, In Time, Out Time, Sign of Security Staff/Officer and remarks. The next entry is for the tax invoice issued by Sunshine Products, the supplier of Nitric Acid (18.880 MT/14.06 KL) dated 01-06-20 with the stamp of Dahej SEZ Ltd, Part II indicates that the tanker was checked and passed through check post at 10:07 AM on 01-06-20. There is an entry no 505 in the inward register maintained by the unit indicating that the tanker No GJ 06 ZZ 5876 entered the Unit on 02-06-20 at about 11:15 AM. There is next entry recorded on 2nd June, 2020 for the tanker containing 'Con. Nitric Acid (CNA 98%)' The xerox copy of the relevant page of register for the entry of tankers and details of invoices etc, are annexed here with Mark Annexure 12.

In the register no date is mentioned for SEZ invoice. The column 'Deliver By' is also not filled in. When the tanker leaves the unit, in the column of Out Time, time is not recorded. This assumes importance as important document known as "TANKER UNLOADING CHECKLIST FOR RAW MATERIAL" (hereinafter referred as 'the Checklist') is not submitted by the unit.

25. As per the Government Guidelines, Industries were permitted to operate with 50% work force during COVID-19 lock down generally across the country. (Notice/Notification Permitting with 50% of the staff is at Annexure 13) Lots of Migrant Labourers have gone back to their Native State during the lock down. The question is whether the unit was being operating with local unskilled labourers who might not be aware about the functioning of plants dealing with hazards chemicals? Where persons are required to deal with hazardous chemicals, it is absolutely necessary that person should have at least ITI certificate for his efficiency in dealing with the subject. If he's a graduate with chemistry the question does the arise. In either situation the person would be competent to deal with hazardous chemicals. It does not transpire from the statements of the operators that they were qualified to operate as none said that he is either ITI

AOCP (Attendant Operator Chemical Plant) or Diploma holder or Graduate with Chemistry.

26. After completing the formalities of checking the invoice and other relevant records, the chemical received is tested and is recorded in a register known as "Titration Record Register". As per the register Nitric Acid sample was tested at 11:50 AM on 2nd June, 2020, however, DMS is not recorded in the titration register as and same is tested by gas chromatography. The report of gas chromatography indicates that the material was received for testing on 2nd June, 2020 at 12.05.41 hours. (Xerox copies of test record are at Annexure 14 collectively)

27. The entry and test records are made available. However, all other relevant record kept in the office, according to the principal witness of the unit, permission is sought for removal of debris from the competent authority in view of the acidic feed. Sulphur dioxide cylinders are lying under the debris and therefore, without the aid of the authority and the experts already consulted in the subject matter, it is difficult to remove the debris. The chemicals are lying in the reactor. Only after removal of all these dangerous materials, it will be possible to enter the office premises to give the feedback on the CCTV footage and other documentary evidence.

28. The Chemicals were required to be unloaded from the tankers. Apart from the entry in the register and test report, the process of steps followed is documented in the checklist with tanker number, material, reporting time and date. In all more than 40 checklist items are there which are required to be recorded/checked by the person concerned. Security supervisor, the person checking the documents, chemist, person in charge of the store, plant operator, shift engineer, head of the Department, fire officer/executive and the plant operator are required to sign. The plant operator and shift in charge are again required to sign in token of completing procedure after unloading the tanker. It is thereafter to be filled by the commercial department and again by the security department at the time when the tanker is leaving the place. Thus, it is not on arrival of the tanker and with the test the same is required to be unloaded.

29. Earlier on 28th May, 2020 the tanker of Nitric Acid was unloaded and the Xerox copy of the checklist is made available. (the xerox copy is produced at Annexure 15) The security department has not merely tick marked the entries but after verifying the details, the same are recorded in the form. Security department has written the name of the driver, his driving licence number, name of the transporter. he checked whether seal wires/sealed bottles of the tankers were intact or not and whether the driver was authorised to transport hazardous material or not. Whether Mobile, Tobacco, Cigar, Match Box, Stove, Kerosene have been collected at the gate or not after verifying. The vehicle moving with hazardous material, the spark arrester, the condition of the tanker such as body/tyre, availability of

extinguisher in the tanker, the tanker is leaky or in damaged condition, TREM CARD is available with the documents and the weight were checked and noted. After completion of this checklist, the time of inspection and when the truck left the gate is mentioned. The quality assurance department checked everything as indicated in the checklist and to put the time of arrival and time of approval of the sample. The commercial department thereafter giving all the necessary details with the time of arrival of the tanker and the time when it was sent for unloading is mentioned. Thereafter the authorised operator checked at least 10 items and filled in certain data. He again verified the tanker number and that matches with the slip, Operator also checked and mentioned whether sufficient space was available in the tank to accommodate the quantity in the tanker, other utilities such as water, steam, nitrogen and instrument air etc, were available or not. He verified that ignition keys have been deposited by the driver to the shift in charge. He mentioned tank number to which tanker unloaded the chemical with the name of the tank, checked its hose connection and on finding OK referred the pump number for unloading. He checked initial level of tank and thereafter the same was signed by the Plant Operator, Shift in Charge and the Head of the Department. Again, the fireman personally checked items mentioned therein and thereafter signed the same. The plant operator again signed as required on completion of unloading after checking 10 items with the time at which the tanker was unloaded completely. This is also acknowledged by the shift in charge with his signature. The commercial department again weighed the tanker and noted the difference between the invoice, weighment of the truck before unloading and after unloading along with the time of arrival of the tanker after unloading and departure after weighment towards gate. Again, the security officer signed the same checklist after verifying the weighment and noted the time and date. Thus, a strict procedure is required to be followed while unloading hazardous chemical. The checklist which has been given for Nitric Acid unloaded on 28th May, 2020 duly filled in and signed by all the persons reveal that at 12:10 PM the procedure of unloading commenced and was completed at 8:45 AM on the next date i.e. 29th May, 2020. Twelve persons are required to sign and at one place and where most important details are to be filled in and checked, three persons namely the Plant Operator, Shift in Charge, and the Head of the Department are required to sign and after completing unloading on checking 10 items, the Plant Operator and Shift in Charge are required to sign.”

37. The version of the witnesses and the acceptance of the same by the DISH is required to be examined very minutely. Before the officers ‘Tanker Unloading Checklist for Raw Material’ was available for the tankers that unloaded DMS on 31-05-20 and Nitric Acid on 28-05-20. (Checklist attached herewith Mark collectively Annexure 21) Reading the details, many others were required to be questioned.

Why 'initial level of tank ____%' as well as 'Final level of tank' are kept blank. How much time was taken for unloading 21.930 Mt Nitric Acid on 28-05-20 and how much time was taken for unloading 18.880 MT on 02-06-20 is not examined. Why? To completely unload the tanker of 21.9 MT the process of unloading commenced at 16:40 hours and the tanker was completely unloaded at 6 AM on the next day. On 2nd June, 2020 within two hours it was unloaded.

38. There were doubts about the version recorded in the statements, original record (the report submitted by the DISH to the District Collector and other record) was called. There is no statement of any person stating about the procedure followed as per the tanker unloading checklist for raw material.

39. It appears that DISH has not questioned the officer of the unit with regard to the accident and on other aspects as well. Turning to important aspect about the checklist it is answered by the unit that "The Tanker Unloading Check-list related to the tankers received on 2nd and 3rd June have not been found due to accident, but Tanker Unloading check list for previously unloaded Nitric Acid and DMS have been attached for your understanding of the procedure followed by us as Annex 12C & Annex 12D." (these are referred as Annexure 15 & 21 in this Report) (the copy of the statement provided by DISH is annexed herewith Mark Annexure 22) However, the checklist dated 2nd June, drawn at 2:35 PM of a tanker bearing number GJ 15 X 8445, containing SO₂ is made available. (the copy of the checklist of SO₂ is annexed herewith Mark Annexure 23) If the DISH would have properly inquired, the truth would have come out. After following the procedure and after checking the hose connection at about 11: 10 hours the checklist at that stage was signed by the Plant Operator Shri Atal Bihari and the Shift in Charge however, the same is not signed by Head of the Department. The tanker was unloaded and the driver reported to the commercial department at 14: 20 hours. This checklist is also of 2nd June, 2020. On behalf of the unit it was specifically stated that the checklist for tankers unloaded on 2nd and 3rd June have not been found due to accident. The question is how this document is made available? When this checklist was produced before the DISH, the officer did not further question about the non-availability of other checklists. The checklists of different dates are given where outside the office? If the driver of this truck was examined, he would have thrown light about the presence of other tankers and many aspects could have been come to light. No tanker driver is examined, Why?

40. On 3rd June, 2020 at about 0920 hours in the inward register there is an entry at serial No. 511, bearing SEZ number 6523 indicating that the tanker number GJ 06 BT 2777 containing 34330 KG of the DMS supplied by Kutch Chemical Industries Ltd, arrived at the unit. However, there is nothing to indicate further about the unloading of this tanker. The Copy of this entry is Annexed herewith

Mark Annexure 24. What was done with 2,5 DCNB 25,400 KGs received vide inward no 503 on 02-06-2020? The unit has a licence to manufacture 2,5 DCA and the unit is expected to sell the material. However, inward register entry no 502 shows that on 2nd June,2020 a tanker brought 23,550 KG of 2,5 DCA. The Copy of this entry is Annexed herewith Mark Annexure 25. It appears that DISH has not questioned further about the unloading of this tanker, Why?

SAFETY AUDIT REPORT ON STORAGE

41. The Safety Auditor at page 49 mentioned that the unloading hose pipes are not tagged with the names of chemicals and recommended that the hoses should be labelled showing the name of the Chemical. It is also pointed out that all the hazards (physical-noise heat etc and chemical-fire, explosion, toxic release etc,) area are identified and the audit report insisted for ambient monitoring devices with alarms for leakage of hazardous material. Not only that but, the Safety Audit Team in the report at Annexure No VII Tanker Unloading S.O.P. It states (Taken verbatim) “6.6 A tanker unloading work permit (Tanker unloading checklist for raw material) is required for all hazardous chemical tanker shall be unloading safely in the tank farm. Tanker unloading activities shall be present by the Area operator. Tanker unloading before should be permitted checklist as per tanker unloading checklist. The tanker unloading some examples includes”. However, there is neither work permit nor the check list duly signed by different persons at different stages. As these documents are not coming forward it can be said that there is a serious breach of safety norms and the authorities under the Factories Act, 1948 and the Gujarat Factories Rules, 1963 granting permission for the erection of the tank farm have not bothered to interrogate the persons properly so as to bring out the truth. (the page of the Audit Report is annexed herewith mark Annexure 26)

HOW SECOND DISASTER AVOIDED

52. Another incident was avoided at the same place and the report for removal and disposal of the hazard’s mixture has been drawn on 10.06.2020. The unit informed the District Collector and the Chairman, District Crisis Group, Bharuch on 10.06.2020, that one tank has residual chemical mixture led in ill manner due to the explosion which took place on 03.06.2020. It was indicated that the temperature was increasing, the possibility of another explosion cannot be ruled out unless the residual chemical from the said tank is removed. On receiving such information, District Crisis Group, Bharuch consisting of the SDM, Bharuch, DISH officials, GPCB officials, DIA officials, Safety Experts from BPMC Ankleshwar, OPAL, GFL reached the place immediately.

53. The officials realised that the material is required to be removed to avoid unavoidable incident. They discussed the safe mode to be adopted for removal of residual chemical. They decided to make lime-

sand bed on hard flooring in open area. An Air Operated Diaphragm Teflon Pump (AOD Pump) of small capacity was arranged for spreading the residual chemical from the tank. On the Bed of lime and sand the chemical was taken out for stabilization, as per the decision by use of AOD Pump by spreading it on lime bed gradually with water sprinkling by fire hydrant to absolve toxic release. It took about three hours. The temperature measured outside the tank of mixture was 84o Celsius and vapour fumes already found inside this tank. They did not take the sample of this mixture for analysis purpose considering the risk of explosion and toxic effect. Ambient air quality was monitored by the officials of the GPCB, the VOC meter indicated 0 ppm in surrounding area. They instructed the occupier of the unit to lift all the waste material generated during the aforesaid activity safely and dispose of as per the permission of GPCB. However, when the team visited, the waste material generated was not removed on the pretext of danger as some cylinders were lying under the debris. (The reports are annexed herewith collectively and Marked at Annexure 27).

54. There is a report from the Expert Member Shri Chinmay Ghoroi, Associate Dean, Chemical Engineering Department, IIT, Gandhinagar, the copy of which is annexed herewith and Mark Annexure 28. The report conveys about the accident, explosion/fire and has indicated the steps required to be taken. It also raises certain questions and the Committee feels that these are required to be considered by the authority concerned.

1. From the reaction scheme from 2.5 DCNB to Dicamba, all the raw materials, intermediates and products are identified in the report.

2. On the day before the accident (June 02, 2020) one DMS tanker (24.98 MT) and one HNO₃ tanker (18.8 MT) came inside the plant premises. After relevant document check by appropriate authority, unloading operation started from two tankers simultaneously. However, due to wrong positioning of tankers and the 18.8 MT of 98% HNO₃ unloaded into the DMS tank storage tank (tank no. 5) which already contained 7.5 MT of DMS and the DMS tanker unloaded into HNO₃ storage tank (tank no. 8) which contained very less amount of HNO₃ (0.9 MT). As HNO₃ unloaded in the tank 5 had 2% water, this water reacted with DMS content in the tank and produces undesirable chemicals such as CH₃NO₃ (highly explosive) CH₃OH (highly flammable) etc. along with increase in the tank temperature. As the tank 5 materials of construction (MS) is not suitable for HNO₃, authority transferred this mixed content (7.5 MT +18.8 MT = 26.3 MT) into another HNO₃ tank (tank number 9 made of MS Glass Line) which had already 0.9 MT of 98% HNO₃. As the mixture was already hot, some of the chemicals started decomposing and pumping operation added extra energy to the content of Tank 9. The tank level was about 94% or more. The pressurized tank (Tank 9) which had higher temperature and pressure exploded. Based on the production data supplied by the industry, the HNO₃ tank level (tank 9 and

tank 8 – both are capacity of 20000 L) was little higher than they reported. Also, according to the register maintained at the gate, DMS should be 24.980 MT. But they claimed that only 22.9 MT of DMS unloaded into the tank 9. Thus, there is no information about 2.08 MT of DMS. Also, there is no explanation of another DMS tanker (34.330 MT from Kutch Chemical Industries) which arrived in on the day of accident (9:20 AM on June 03, 2020).

3. As per the reaction scheme, H₂ is required to produce 2, 5 DCA from 2,5 DCNB. The analysis shows that industry used to buy 2, 5 DCA which they are supposed to produce and use for the process. But there is no information on why they used to procure H₂ as well as 2,5 DCA both. If the unit is receiving H₂ and 2.5 DCA both, unit must be producing something else using H₂ which would not be there in the consent. Also, according to the tank farm design, there is no tank designated for 2,5 DCA. But industry used to store 2, 5 DCA in one of the tanks (tank 2). They did not fill the tank level properly in the required tank farm form. Based on the consumption pattern of May 28, to June 02, 2020, the Dicamba production per day found to be about 10 to 15 MT. From the mole balance it is found that to produce 10 MT/day Dicamba production, they need ~4 MT of HNO₃ and 6 MT of DMS in a day. **This suggests that HNO₃ tank content was more (atleast 4 MT – amount require for one day production) than their claim (0.9 MT)**

4. Also, Dicamba production data reported by the industry is 563 MT Dicamba during March to May 2020. However, DMS consumption data shows that the actual production in the tune of 1137.9 MT during those three months. **The consumption data of other raw materials is also not matching with industry's claim.**

5. After considering probable chemical reactions in the storage tanks 5, it is pointed out that there was a possibility to form about 1.24 ton of TNT (only from Tank 5) capable to release 5.18 GJ or 1.43 MWh of energy. The reactions are exothermic and expected to rise the tank temperature. Admittedly there was no temperature measurement on the tank. The report dated 10th June, 2020 is also considered and it is pointed out that “as temperature measured outside the tank of mixture was 84° Celsius and vapour fumes were already formed inside the tank, we can't (were) not able to take sample of this mixture for analysis purposes considering the risk of explosion and toxic effect to any person”. It is also noted that the persons were spraying water on a tank No. 5 continuously to control the temperature as admitted by the unit persons. When the heated mixed materials (DMS & HNO₃) transferred through pump from Tank 5 to tank 9, the more DMS decomposed due to water available in the tank 9. Also, as the extra energy imparted by pump, the mixture was more reactive and continuous pumping into tank 9, left very less room for vapors in the tank 9. Also, an increase temperature favoured the decomposition of HNO₃. Vapour being flammable and explodes when heated. During the explosion all other tanks with combustible materials (e.g. 2,5 DCA, 2,5 DCNB, DMS, ODCB etc.) on the ground were also contributed as fuels and large energy liberated through the explosion.

6. The expert expressed an opinion in detail. So far as consumption and details of production are concerned, the expert has pointed out the need for the materials for 1 MT of Dicamba in table 4C. The committee has figures from the GPCB, MoEF&CC and DISH. Considering the figures supplied by the unit for the months of March 2020 to May 2020 to all the aforesaid 3 agencies are 563 MT, 541.7 MT and 591.1 MT accordingly. The said intimation in a table format is annexed here with collectively and Mark Annexure 29. Why the unit gave information to all the agencies for all the 3 months different figures of having manufactured the product? More surprisingly, on the basis of consumption overall material it appears that the unit must have produced 1137.9 MT of Dicamba. **From this it is clear that unit was conveying the convenient figures to the different agencies. Considering the consumption of the raw material as per calculations production would be more than double and the same is not shown or some other chemical has been manufactured and for which no intimation is given to any authority.** Consumption and production details are as under. Please refer table 4C in Annexure 28.

Sr. No.	Month	Name of Raw Material	Actual Consumption Quantity (in MT)	MT of Raw Material required for 1 MT of Dicamba	Expected Dicamba production (MT)
1	March 2020	DMS	205.585	0.601	342.1
2		HNO ₃	103.120	0.434	
3		Hydrogen*	67479	534	
		Hydrogen	6.065	0.048	
4		DCNB	137.000	1.397	
5		2, 5 DCA	173.100	1.076	
1	April 2020	DMS	181.500	0.601	302.0
2		HNO ₃	102.000	0.434	
3		Hydrogen*	57025	534	
		Hydrogen	5.125	0.048	
4		DCNB	113.500	1.397	
5		2, 5 DCA	108.000	1.076	
1	May 2020	DMS	296.765	0.601	493.8
2		HNO ₃	145.760	0.434	
3		Hydrogen*	83855	534	
		Hydrogen	7.536	0.048	
4		DCNB	150.000	1.397	
5		2, 5 DCA	180.000	1.076	

		Total			1137.9
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7. *Recommendations to avoid future incidents and other questions are as per the report Mark Annexure 28.*

SECTION 8

STEPS REQUIRED TO AVOID SUCH INCIDENT (NATIONALDISASTER MANAGEMENT AUTHORITY)

55. *The question is how such accidents can be avoided. There is National Disaster Management Authority (NDMA) of the Government of India, which has issued guidelines for Chemical Disasters (Industrial).*

56. *The common causes for chemical accidents, deficiencies, safety management system and human errors are noted. The chemical accidents fire, explosion and/or toxic release were resulting irreversible pain, suffering and death. To minimise such accident and to improve emergency preparedness at all levels, substantial efforts are still required to predict the occurrence of disaster. (Page xvii)*

57. *It is also stated that it has been realised that effective Chemical Disaster Management (CDM) is possible by the adoption of preventive and mitigation strategies as most chemical disasters are preventable in comparison to natural disasters that are difficult to predict and prevent. Statutory inspection, safety audit and testing of emergency plan, onsite emergency plan, offsite emergency plans, medical emergency plans, information on chemical, technical information have been given importance.*

58. *It is indicated that the disclosure of information via Material Safety Data Sheets (MSDS) by occupiers to workers on chemical hazards is a statutory requirement. The information in MSDS is generally complex and exhaustive, therefore, supervisory staff and workers find it difficult to comprehend the information available to them. (In the instance case, the workers have not been questioned by the officers of the DISH in this regard. Why? If they would have been questioned, the officers would have known that the unit is conveying about the hazardous chemicals).*

59. *It is specifically indicated that No Objection Certificates (NOCs) for establishing a storage facility often lack sufficient scientific knowledge and need to undergo appropriate training.*

Before granting the permission of tank farm by the relevant authority, if they would have studied the effect of mixing the chemicals even by accident, they would have realized that certain acids cannot be kept nearby, if they would not have allowed Nitric Acid in the tank farm

area and would have asked to store at separate place the accident could have been avoided.

67. In the instant case, even looking to the pictogram, name of the hazardous chemical on the tankers and corresponding tanks it would not have been difficult to identify the material in tank as well as tanker and it would not have been difficult to connect the hosepipe with the tank storing the same chemical. Despite the names, written in much large fonts clearly as admitted by the person who connected hosepipe, how he committed the mistake. (For transporting hazardous chemicals, sub rule 9 of the Motor Vehicle Rules, imposes strict conditions on a person driving a transport vehicle carrying hazardous chemicals. He must have ability to read and write at least one of the languages specified in VIII schedule of the Constitution and English and must possess a certificate of having successfully passed a course indicated in the syllabus and periodicity connected. The syllabus if read it becomes clear that driver to carry hazardous chemicals must be trained in any of the Institute recognised by the State Government for the period indicated.) As a person would know the language, for the purpose of easy unloading would park the tanker near the tank. The hosepipe would not be so long that from any corner of the tank farm, the tank can be connected. He is aware about the pictogram and the hazardous chemical contained in the tanker. In short, the driver would know the language and where to park the tanker for unloading the chemical. He would not park his tanker opposite the tank which contains different chemical. These aspects have not at all taken into consideration by the officials of the DISH and it seems no inquiry has been made).

The person who connected the tankers with the tanks was not authorised person to work as tank farm operator. It was duty and responsibility of tank farm operator to connect the tankers with the tanks.

SECTION 10 **STORAGE OF HYDROGEN CYLINDERS**

68. As reported two trucks carrying hydrogen cylinders were seen during and after the accident in the photographs and the same is mentioned in the panchnama drawn by the Police Authority. However, the trucks of hydrogen cylinders were not seen by the members of the committee during the visit. The question is why the trucks were removed and with whose permission? The DISH has explained that the trucks were removed from that place as they posed fire/explosion hazards and considering safety factor to prevent another accident, the trucks were removed from the premises urgently. However, there is no answer whether the trucks were removed with the permission of any one or not.

69. The report dated 1st July, 2020 indicates that as directed by Joint Chief Controller of Explosives (HOD), Nagpur, a team of officers comprising of Shri V.B. Borgaonkar, Dy. Chief Controller of Explosives, Shri Sanjay Kumar, Controller of Explosives and Shri Kunwarpal Singh, Dy. Controller of Explosives visited M/s. Yashashvi Rasayan Ltd, Dahej, Distt: Bharuch (Gujarat) on 04/06/2020.

70. As per report, the accident did not occur in the premises or installation licensed by the PESO. The unit is required to follow the provisions contained in the Gas Cylinder Rules, 2016, schedule 3 of MSIHC Rules, 1989 and Petroleum Rules, 2002. The unit was licensed by the PESO, the storage of 80 Cylinders SO₂, 90 KL Petroleum Class A, 180 KL Petroleum Class B, 9 nos. of tanks of 30 KL storage capacity each (2 tanks for storage of methanol (Petroleum Class A), 5 tanks for storage of Xylene (Petroleum Class B) and 2 storage tanks for high-speed diesel (Petroleum Class B). All underground storage tanks were found intact except breakage of above ground pipelines. The unit was also licensed to store 40 KL Liquid CO₂ in 2 storage vessels (20 KL each) under Static and Mobile Pressure Vessels (U) Rules, 2016 were found intact. As the PESO licensed premises were found severely damaged and were adjacent to chemical storage tank farm and found not fit for further operations, the licenses granted by PESO were suspended as an interim measure on 05/06/2020.

71. The PESO found 282 Hydrogen Cylinders near CO₂ bulk storage and the tires of the trucks as well as hydrogen cylinder cascades were found burnt. But the hydrogen cylinders were not exploded. It was not possible on account debris, to ascertain whether the hydrogen gas in the cylinders has burnt out completely or not.

72. On behalf of the Unit it was conveyed that the unit is holding license for storage of hydrogen cylinders cascades. **However, on perusal of the office records of the PESO, no license was issued to the unit for storage of hydrogen cylinder cascades. The PESO has taken appropriate action against the unit as well as the suppliers of hydrogen cylinders. The PESO advised not to remove the debris or the Cylinders or any Petroleum Products Stored without obtaining the permission from PESO. The officials of the units were advised not to remove any debris or cylinders or transfer petroleum products stored in the underground storage tanks without obtaining permission from PESO.**

73. However, when the team visited the unit again on 9th June, 2020 it was noticed that the unit shifted the fire exposed hydrogen cylinders. The officers visited the place where the Cylinders were

shifted for examination and testing and the officers observed that copper tubing/ manifolds connecting hydrogen cylinders were broken at multiple locations. The valves of many hydrogen cylinders were missing. According to the report it is proved that in the post explosion fire, hydrogen gas from all 282 cylinders of 160 L volumetric capacity each was completely burnt. Hence, the hydrogen cylinder owners were called upon to immediately send the cylinders to the manufacturer of cylinders i.e. M/s. Everest Canto cylinders, Gandhidham, Kutch for examination and testing as required under Rule 24 of Gas Cylinder Rules, 2016 and also to take necessary action under intimation to the PESO office.

74. On the second visit the unit was asked to produce the license for storage of hydrogen cylinders. However, the unit had no license and thus the unit was storing hydrogen cylinders in contravention of Rule 43 of Gas Cylinder Rules, 2016. In view of this show cause notices were issued to M/s. Yashasvi Rasayan Limited, the unit in possession and for contravention of the Rule as well as to the manufacturer/filler of hydrogen gas cylinders, M/s. Gujarat Alkali Chemical Ltd. and supplier / transporter of hydrogen gas cylinders i.e. M/s. Ideal Chemical (I) Pvt. Ltd., Vadodara as well as M/s. Goel MG Gases Pvt. Ltd., Ankleshwar, Bharuch. The report indicates that the action will be initiated after the response is received.

75. Dy. Chief Controller of Explosives, Vadodara and Shri Sanjay Kumar, CE were present in the meeting of the Committee and have submitted their report dated 1st July, 2020 stating that no investigation from PESO is required to find out the root cause of the accident since above said devastating explosion followed by massive fire occurred in chemical storage tank farm and not covered under any license granted by PESO. In the report further it is stated that the company has submitted information as per Schedule 6 of MSIHC Rules, 1989 i.e. 'Information to be furnished regarding notification of major accidents' to DISH as required under Rule 5 (1) of above said Rules.

76. The PESO has given its recommendations. (The Report is annexed herewith Mark at Annexure 30).

SECTION 11 **DAMAGES**

77. The question of damage caused to the environment is an important aspect. On account of the fire/explosion, fire tenders came to rescue. With the help of firemen, the situation was brought under control. However, for extinguishing the fire, lot of water, not only of the fire tenders but also of the unit was utilised. The water mixed with chemicals moved through the drains / storm water drains of SEZ/GIDC. In all 406 KL water was used for extinguishing the fire.

About 140 KL waste water was collected in the drain of the unit. About 4 KL waste water was found in the storm water drain of the unit itself. Approximately, 262 KL wastewater drained out of the unit premises. The wastewater generated on the date of incident ultimately was carried over to storm water drainage of SEZ II near the main gate of the unit. The wastewater samples collected were analysed. **According to the report, pH and COD exceeded the standards prescribed by GPCB.** The copy of the said report is annexed Mark Annexure 10.

78. On 16th June, 2020 a Meeting was convened at Dahej along with Collector, DSP, DISH, PESO officials. The Committee members along with other officials visited the accident site and observed the spot of the accident and damage caused in premises of the industry. Industry representative Shri Yash Patel along with his staff was present during the visit and shared information about the accident. The Committee members could not go near to tank farm area where accident/explosion took place due to safety reason as advised by experts. CPCB and GPCB collected three samples of wastewater from different places accumulated in the storm water drains generated during the firefighting operation. **This makes it clear that though earlier direction was given by GPCB to remove wastewater, unit did not remove wastewater from the channel and remain in the channel. The water was contaminated due to spilled raw materials viz. Conc. Nitric acid, Di-Methyl Sulphate, Consulphuric acid, Caustic Potash Lye, Caustic Soda Lye etc. on analysis, pH, TSS, COD, BOD were found higher than the norms prescribed by the GPCB. The report of visit and analysis is annexed herewith, Annexure 31.**

79. The members of the Committee (NEERI, MoEF & CC & CPCB) along with the officials of the GPCB visited the unit and the stormwater drain of Dahej SEZ II and its meeting point to the sea near confluence of river Narmada to the Gulf of Khambhat (Cambay) as decided in the meeting on 29-06-2020. The wastewater in storm water drain inside the premises was found dried in comparison to earlier visit on 16th June, 2020. Wastewater from the other drains of the premises were transferred to collection tank of ETP. The hazardous waste was not properly stored and the same was required to keep in drums with labels keeping proper distance between the drums. The same was required to be incinerated. The members carried out the inspection of common storm water drain from unit premises up to its meeting to SWD point which is made of RCC structure. Substantial quantity of water on account of rain, domestic sewage contaminated water from the industries and stormwater from Dahej SEZ II was observed in common SWD which was blocked near Jetty and no water was flowing. The water was blocked temporarily by making earthen Bund from 30th May, 2020 on account of construction as detailed in the report for protection of road and other

area from the sea water tied. Thus, it is very clear that no wastewater entered the sea. It was informed by the GIDC that the storm water drains of SEZ II will open from 1st July, 2020. In view of the prevailing conditions in heterogeneous nature of water in the common SWD, the expert committee did not collect sample of water from the storm water drains as the contribution from individual unit could not be ascertained. The copy of the report is annexed here with and Mark Annexure 32.

80. **There are reports about the air pollution as well as water pollution. The reports prepared by GPCB for analysis of samples taken on 3rd June (Air & Water) and 10th June (Air), and sample taken by GPCB/CPCB on 16th June (Water) are indicating pollution in the environment. The copies of the reports are annexed herewith and collectively marked as Mark Annexure 33. The water used for firefighting resulted into contaminated water spread within the premises, collected in storm water drain within the premises and also flown out of premises in the storm water drain of SEZ-II on 03.06.2020. The roads outside the unit are paved by R.C.C., there was no chance of percolation of wastewater. On the basis of Chemical Oxygen Demand (COD) of the firefighting wastewater, as per GPCB analysis results, flown out of premises is used for calculating the water damage cost which comes out to a negligible amount (in hundreds) and therefore not considered by the Committee. Whatever damage of soil within the premises is due to spread of burnt chemicals and contaminated water generated out of firefighting operation. Since the use of land (soil) within the industry premises is not for agricultural purpose besides being coastal land, which is mostly non-fertile in the region, the cost of soil is not used in damage calculation, moreover, there is no damage to the soil on open land.**

Air environment damages due to combustion of chemicals in the accident leading to release of air pollutants and CO₂ (which is a green-house gas) needs to be accounted for air environment. The damage cost estimation for air emissions will have to be carried using various tools and techniques under assumptions. Since there are different type of chemicals, the stoichiometric pollutant formation needs to be studied followed by the cost estimation due to its release. This study would require at least three weeks' time and therefore additional time is requested. The said report submitted by NEERI is annexed herewith Mark Annexure 34.

81. **So far as compensation to the deceased is concerned, the salary drawn and in case of daily wagers or on a contract basis wages per day are taken into consideration for arriving at a conclusion as to what should be the amount of**

compensation to be paid to the heirs of the deceased. The persons sustained injuries and succumbed to the injuries. All innocent workmen sustained injuries not on account of their act of neglect or while discharging their duties came in contact with machinery or the chemicals. The unit was required to take strict measures for unloading the hazardous chemicals, but has failed in taking care while dealing with hazardous chemicals. Even after acquiring the knowledge on 2nd June, 2020 that incompatible hazardous chemicals mixed in storage tanks, the unit did not stop the process in the factory and allowed the workers to work. Even on the next day, 3rd June, 2020 as if nothing has happened the unit commenced the process as usual. This indicates that the unit without bothering for the life of a human being continued with the operation of the unit in a normal way for gain. Therefore, this being an act with the knowledge of the consequences of incompatible chemicals to explode that will result in death needs strict action. It was not an act of accident. The officials were not only highly qualified in the subject of chemical engineering, but had long experience in the manufacturing of chemicals and therefore, were aware about the consequences. The presumption is required to be raised that they were qualified and experienced. The table is drawn giving all the available details of the persons who succumbed to the injuries with calculations to indicate the entitlement of the heirs of the deceased. The said table is annexed herewith Mark Annexure 35. The unit submitted a statement on 28th June, 2020 that they have paid ₹1,13,13,505/- as against their commitment to pay ₹1,45,13,505/-. It is also stated in the statement that for hospitalisation of 49 persons, the unit has paid the sum of ₹58,87,292/- for medical expenses and nothing is required to be paid for medical expenses now. The report submitted is annexed herewith and Mark Annexure 36.

82. So far as the persons who sustained grievous hurt are concerned, till today the disability certificates are not provided. Maybe, on account of the injured having sustained fractures or operated or hospitalised, within a short period it may not be possible to issue a certificate about the percentage of disability. Soon after receipt of the disability certificate for injured persons the committee will be in a position to suggest the amount to be paid to the person sustained, grievous hurt or hurt. The nodal agency of the committee has asked the Collector to forward the disability certificate from a medical officer and inability of a person to work for the number of days is yet not received and the Collector is conveyed about the same again. The committee shall forward the report in this behalf. According to the list forwarded by The Sub Divisional Magistrate 11 persons died on account of the injuries

sustained. While 21 persons sustained grievous hurt, 27 persons sustained simple injury and 32 persons sustained minor injuries. Thus, according to the Sub Divisional Magistrate in all 80 persons sustained injuries. The list provided by SDM in this behalf is annexed herewith Mark Annexure 37. However, the list submitted by the office of the Collector dated 30th July, 2020 the copy of which is annexed herewith Mark Annexure 38, indicates different picture. The list forwarded on 27th July 2020 names of 92 persons having sustained injuries including grievous hurt. However, in a list certain column are not filled in to find out the nature of injury etc. If such names are deducted, total number of injured persons would be 64 persons. In a list received recently (30th July, 2020) indicates 22 persons sustained grievous hurt and 28 persons sustained simple and 43 persons sustained minor injuries. The persons sustained minor injuries were not hospitalised. We find that the list is not properly synchronised and no proper exercises done. However, according to the list as of 11 persons who died have been paid or not, it seems that the unit has shown having paid more than Rs. 15 lakh by way of ex-gratia amount and therefore no further amount is paid by the Collector in case of 3 persons who died. To the heirs of one deceased person, the Collector has paid the amount of difference while in case of 3 deceased, the matter is under process. For remaining 4 deceased unit has not paid any amount however, the Collector has made payment in case of one deceased while other 3 are not paid. So far as the persons who sustained grievous hurt, the list forwarded by the office of the Collector indicates that 19 persons have been paid however, 3 persons are yet to be paid. So far as the persons sustained hurt are concerned, the payment has been made to 26 persons and 2 are yet to be paid. Possibly this amount is not paid as they had not opened the bank account. A comparative table is prepared to give an overview picture as to amount paid and by whom. The said list is annexed herewith mark Annexure 39.

*So far as deceased persons are concerned, considering their monthly salary, whether he was on the role of the unit or not, or whether he was a daily wager, or a workman of a contractor and what was the amount paid towards wages have been taken into consideration along with multiplier and other expenses and loss of enjoyment. In a list giving the names of the deceased and all other details by considering appropriate multiplier the committee would request to consider for compensation. A table is annexed herewith showing the amount of compensation suggested to be paid to the deceased mark at Annexure 35. **For a quick look, the names of the deceased with age, earning per month, multiplier and entitlement are shown as under-***

Sr. no	Name	Age	Salary if permanent per month	Multiplier	Compensation
1	Rashmikant Chauhan	35	66946	17	1,15,42,738.00
2	Naresh Prajapati	26	20168	18	40,67,216.00
3	Krunal J Patel	27	19851	18	40,15,862.00
4	Surajlal B Singh	35	10350	17	20,77,980.00
5	Munnasing Shiv prasadsingh Kori	28	10350	18	21,64,920.00
6	M D Mazar	25	10350	17	20,77,980.00
7	Pramod Yadav	24	10350	17	20,77,980.00
8	Arun Buddhsen Kori	20	9750	16	19,10,400.00
9	Jayant Mahanto	28	10350	18	21,64,920.00
10	Hari Darshankumar Chaudhary	20	9750	16	20,10,400.00
11	Tripuraikumar Roy	25	9750	17	19,92,300.00
Total Compensations					36,102,696.00
Rupees Three Crore Sixty One Lac Two Thousand Six Hundred Ninety Six Only					

83. With regard to the damage caused to the properties of the villagers and damage caused on account of environment witnesses appeared before the Committee. Shri Jayantibhai Manabhai Ahir, Ex-Sarpanch, village Luvara, stated that about 375 houses were damaged on account of explosion and one person sustained a minor injury. However, he had no evidence to substantiate the extent of damage caused to the houses. Shri Raisangbhai Rajibhai Rathod, Sarpanch Luvara Gram Panchayat, Tal. Vagra, stated that in view of the applications given by the villagers complaining about the damage caused to their houses, the unit was informed and a survey was carried out to find out the extent of damage caused to 465 houses. About a boy having sustained an injury on account of falling material, he stated that the unit is treating the injured boy and is also providing a vehicle. He further stated that the company has agreed to pay compensation for the injury sustained. He further stated that an estimated amount for damages to the villagers to the tune of ₹18,22,280/- has already been paid. The unit paid 90% of the amount to the persons affected on account of damage to the houses. More than ₹5 lakh are yet to be paid. It is also stated that they are

committed to make the payment in all of ₹23,78,980/-. Witness further stated that the greenery is affected on account of operation of number of factories in the area. He pointed out the need for the hospital as well as fire station in the area. Shri Jitendrasinh Hathisinh Chavda, Ambheta, Tal. Vagra, Dist. Bharuch, stated that residents of village Luvara were shifted to village Ambheta. He stated that the people who were shifted are not satisfied with the amount of compensation. He stated that everyone was paid between ₹4000 to ₹5000. The people from village Luvara came at about 2:30 PM and returned by 12.00 hours (mid night). He further stated that they came in buses of State Transport, Reliance Industries and other Industries arranged by the administration. They returned by government buses. He also stated about a person who sustained an injury which was not bleeding one. He stated that the residents of village Luvara were paid ₹17 lakh. The Director of the unit did not say that the amount was paid. It is required to be noted that no person whose house was damaged or shifted to another village on account of apprehended danger appeared before the committee. The persons who appeared and claimed that the amounts were paid was neither a receiver of the amount nor a representative of the persons nor produced any material to show the receipt of the amount. However, the director of the company has not referred this aspect at all. Neither the claimant nor the receiver of the amount appeared. A list was given dated 28th June, 2020 to indicate that the sum of ₹16,54,810 were paid to 332 persons of village Luvara on 19th June,2020 by cheques (number of which are also mentioned). However, the office of the Collector forwarded two lists, one indicating the claim amount by 360 persons claiming Rs.13,77,855/-, the other list of payment of Rs. 26,66,930/-to 480 persons. (One under process and for five there is an agreement) these three lists are annexed herewith Mark Annexure 40. No material has been placed by the office of the Collector to show that any of the displaced person is paid as directed by the Hon. Tribunal before the committee. In all 3241 nos. of people as per the list forwarded by the office of the Collector (Mamlatdar Vagra) were shifted for their safety on account of apprehended danger and they are required to be paid.

84. One Shri Pravinbhai Madhiwala, a Fisherman, stated before the Committee that after the blast in the unit there was rain. He received a telephone from his friend that the dead fishes were lying on the sea shore. On reaching the site after verifying, he contacted the officer of GPCB. Immediate visit was made and sample of water was collected for examination. According to him Fisherman are not getting a particular fish named 'Hilsa'. As stated by him this fish is available only during monsoon season. His request was that the polluted water

should be discharged in the high sea so that the fishermen would not be adversely affected. He claims that on account of non-availability of the fishes, he suffered a loss to the tune of 25,000 in this season. He further explained that 'Hilsa' fishes are available in the Narmada river. He was not sure about the date on which he complained to the GPCB but he was sure that officer of the GPCB arrived on the same date when he telephoned. He stated that as per the GPCB record fish-kill incident took place on 12th June, 2020 the date of intimation may be on or about 12th June, 2020. The report of the analysis of water is annexed herewith Mark Annexure 41. The Department of Fisheries also carried out the exercise to find out the cause of fish-kill and the report in this behalf is annexed herewith Mark Annexure 42. **It is observed from the report of GPCB that 800-1000 nos. of dead fishes were observed in the small shallow stretch having 3-4 feet wide and 30-40 ft length towards the Sea, no dead fishes observed nearby location.** Outlet of storm water drain of SEZ-II area, were found blocked due to civil work of culvert box and there was no direct discharge of industrial wastewater or any other water observed. The two samples of accumulated water from pond on the shore were collected and observed that DO: 3.26 & 2.3 mg/l, BOD: 18 & 35 mg/l, COD:152 & 242 mg/l NH₃-N: 14.02 & BDL mg/l etc. Dissolved Oxygen is found to be less. Fisheries Department also carried out inspection of the site. As per letter from **Fisheries Commissioner, Bharuch to GPCB, it is observed that fishes were died due to insufficient water/ lack of oxygen and primarily there is no indication that fishes died due to pollution.**

While connecting accident and resultant pollution from the unit, it is found that the incident of fish kill was on 12.06.2020 whereas accident took place on 03.06.2020 and there was no discharge from Storm water drain (SWD) from SEZ-II area where the contaminated water arose out of firefighting operations flown into SWD. SWD was blocked due to civil work of Culvert box from 30.05.2020 to 30.06.2020 as per GIDC information. Therefore, fish kill and accident at the unit cannot be co-related. (The report at Annexure 32 is produced in this behalf.)

SECTION 12

RECOMMENDATIONS

92. 1. Technical points:

- i. There must be the tank temperature indicator with a facility of (1) a siren in case of an emergency / increase in temperature, and (2) the temperature should reflect in the DCS (The office of the responsible officer).
- ii. Safety valve of the storage tank to be checked regularly and be recorded in appropriate register.
- iii. There should be risk assessment study of chemical plants at certain intervals.

2. Procedure:

- iv. *There is a need of inherent safer socket design to transfer all liquid materials independently. (The different sizes of couplings of tanks and the pipe connecting the tanker).*
- v. *The tank farm operator must get the connection certified by a responsible officer namely, shift in-charge / H.O.D. before unloading commences.*

3. Qualification

- vi. *Tank farm operators must be a qualified (ITI – AOCP or B.Sc chemical) with certain experiences.*

4. Administrative:

- vii. *CCTV must be operative for the entire the procedure with a facility to look the same by the officer responsible and data should be saved atleast at two different places including one outside the plat facility. This will help the people to get the data even if something happens in the plant facility.*

5. Shortage and training of manpower:

- viii. ***It is necessary to appoint adequate number of Scientists and other officers as well as other staff considering the number of industries so as to effectively monitor the manufacturing units. Shortage of staff is also referred in the report of the Comptroller and Auditor General of India on Environmental Clearances and Post Clearance Monitoring 2016 that there are shortfalls in monitoring of environmental parameters. One of the reasons mentioned in the report is the shortfall/inadequate staff. Considering the numbers of Environmental clearance by MoEF & CC, New Delhi as well as SEIAA Gujarat (No. of ECs issued by MoEF & CC, New Delhi- Approx. 1500 & by SEIAA Approx. 8300 for the state of Gujarat only), the scientific staff in Ministry's regional offices should be strengthened for post EC monitoring at regular intervals. Thus, for having an eye over all the units, the Committee feels that the government should take appropriate steps for appointing adequate staff. The PESO also pointed out the same concerned the Gujarat being most industrialized state having about 40,000 licensed premises covered under various Acts and Rules including 1800 Major Accident Hazards premises, this is one of the pressing problems.***
- ix. *The manpower of the DISH in the industrial area must be related to the numbers of units in the area. Considering the incident and the quality of the inquiry made by DISH, it is desirable that proper training should be imparted to the officers of the DISH. This will improve the efficiency of DISH.*

6. Tank farm:

- x. *The entry of tanker should be restricted considering the size of the tank farm area (The authority granting permission should also bear in mind the incompatibility of the different chemicals). The position of the tank in the tank farm area should have direct entry and exit so that the tankers movement will be easy and in an emergency, the tanker can leave the place immediately.*
- xi. *The tank farm operator must follow the directions indicated in S.O.P. strictly for unloading and no material should be unloaded without following the S.O.P.*
- xii. ***In view of the incident which took place on account of mixing of incompatible chemicals, the government must come out with a policy with regard to tank farm to avoid reoccurrence of incident on account of hazardous chemicals. It is absolutely necessary to carry out a study on incompatibility of chemicals so as to convey the officer as well industry. The storage of compatible and incompatible material should be at different places. The minimum separation distance between the storage tank and dyke wall surrounding the tank shall be half of the height of the storage tank. The height of dyke should be one fourth of the height of the tank which should be of RCC structure of appropriate width. This will reduce the effect of any explosion.***

7. Management & study:

- xiii. *HAZOP study direction / instruction must be carried out strictly and regularly by the unit.*
- xiv. *Management to educate the staff on Materials Safety Data Sheet (MSDS) and engineers & operators in the plant must study the same.*

7. DCG, Hospitals:

- xv. *All Industrial Zone/SEZ should have their own Local Crisis Group. The District Crisis Group should give surprise visit to the factories regularly at least once in a quarter and check the operation of factories. At the end of the visit, they should generate a report and submit to the State Crisis Group.*
- xvi. *As per the Chemical Accidents (Emergency, Planning, Preparedness, Response) Rules, 1996, brought out under the Environment Protection Act 1986, it is mandatory to have State Crisis Group (SCG) and District Crisis Group (DCG) to help the State Disaster Management Authority (SDMA) and District Disaster Management Authority (DDMA) under the Disaster Management Act, 2005 in advisory roles to deal with Chemical Disaster Management (CDM). There is no emergency response centre / disaster management centre within the SEZ. Therefore, the authorities must provide urgently such centers. As the Industry in the instant case failed to report in this behalf there must be a provision for not reporting immediately to the DCG and DDMA or at emergency control room for chemical disasters in the state (as in the instant case it is at Vadodara). The Rule making authority though having prescribed 48 hrs.*

time limit within which the competent authority is required to be informed but there is no provision for the breach with regard to non-informing immediately or within 48 hrs. (In the instant case it is admitted the report was submitted on 9th June, 2020 against the incident on 3rd June, 2020).

xvii. The requirement of a Hospital in an industrial zone or SEZ and particularly industries are engaged in hazardous chemicals is a must. Even Hospitals at distance of 50 kms are general hospitals and not specialised in chemical burns and injuries arising out of accident on account of hazardous materials.

xviii. District crisis group must undertake mock drill under off site emergency plan and crisis management in every industrial cluster or SEZ on failure action should be taken against DCG. (In the instant case they were satisfied with mock drill in one place in a district. In the instant case in one district there are more cluster of industries. Therefore, in each cluster an exercise aforesaid is a must – DISH has admitted that such exercise is not carried out in all clusters).

xix. As at other places in the state of Gujarat in the industrial clusters, the GPCB has provided tower for air quality monitoring and same is being monitored by the GPCB. Dahej – I & II or the SEZ being an industrial town and factories are particularly engaged in hazardous chemicals, the committee is of the opinion that there should be Continuous Ambient Air Quality Monitoring Systems (CAAQMS) at all strategic locations. So that everyone in that area is aware about the air pollution.

8. **Safety audit:**

xx. For the purpose of auditing the safety, the government must make a panel of safety auditors to inspect the factory independently twice in a year and they should submit their report directly to the DISH. The safety auditor should be made answerable to the government.

xxi. The committee is of the opinion that sub-rule (9) of Rule 68(J) of the Gujarat Factories Rules 1963, refers to safety report and safety audit reports, under that Rule sub rule 2 gives a choice to industry to select the auditor for the purpose of the safety audit. The committee of the opinion that the state government be requested to consider the case and particularly safety report from independent auditor and to amend the Rule as below:

2). After the commencement of these Rules, the occupiers of both the new and existing industrial activities and isolated storage must be checked by the government through the safety auditor which is accredited by an accreditation board to be constituted by the Ministry of labour, Government of India.

3). The auditor within 30 days of audit shall send the report to the chief inspector with respect to the audit recommendations and which shall be examined by the government within a period of 1 month and the industry shall be directed to carry out within the period specified the recommendation that may be made by the Government in this behalf.

9. **For SEZ / Industrial zone:**

- xxii. Ordinarily a buffer zone of 500 meter is provided if there is a residential zone. **But in case of hazardous chemicals the buffer zone should be of 1000 meter minimum in view of the nature of the chemicals hazards associated with it. (In the instant case it is found that industries are close to village Luvara & Lakhigam). In a buffer zone, industries as well as government should provide proper plantation for pollution free atmosphere to the residents.**
- xxiii. **In SEZ or industrial zone for the benefit of the residents in that area the government should provide sewerage network so that the domestic wastewater generated by the residents treated in the sewage treatment plant.**

10. **Other recommendation:**

- xxiv. **Constant monitoring is required under the direction of the Hon. Tribunal to the urgent need for expediting the matter of providing effluent pipeline (4.5 km) for deep sea discharge by GIDC as per NIO recommendation to ensure adequate dilution and dispersion of effluent (Despite reminders GIDC has failed)."**

11. We may now refer to the additional report on the subject of assessment of compensation as follows:-

"2.3 Valuation of Environmental Damages

Business activities in most of the sectors result in harmful emission of particulates and gases pollutants into air leading to air pollution. Pollutants are either emitted directly (primary pollutants) or are formed in atmosphere due to reaction of two or more pollutants. Due to uncertainty, secondary gaseous pollutants are not considered here. Most of the primary and secondary air pollutants create negative impact on human health, visibility, agriculture, tourism etc. There is a need to understand the level of impact the pollutants generate and monetizing these impacts / damages 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.

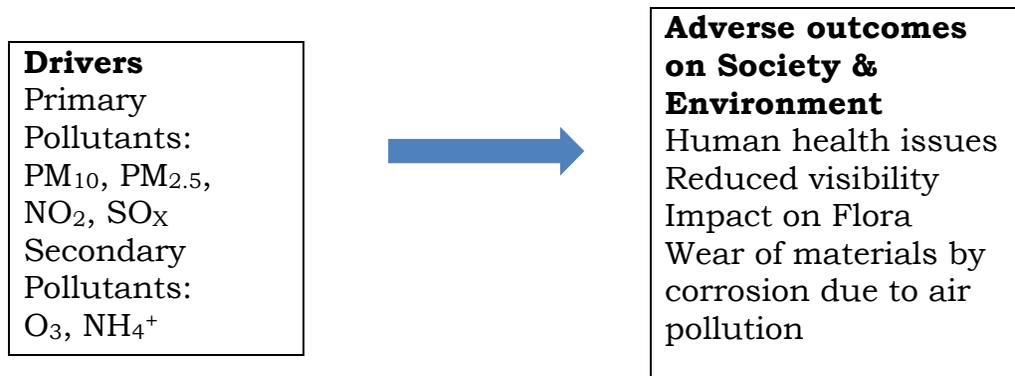


Figure: Impact Pathway.

Emission of primary pollutants and formation of secondary pollutants results in poor air quality ultimately leading to some adverse impacts on human and environment as follows.

1. **Health effects on human:** Emission of pollutants lead to respiratory diseases such as bronchitis, asthma, allergy, lung disorder, pulmonary diseases, Lung cancer etc
2. **Visibility:** Navigation during the time of transportation is largely affected due to the formation of smog. PM and O₃ are the major contributors to reduced visibility.
3. **Impacts on flora:** Reduced air quality within the atmosphere can retard the growth of trees affecting metabolism at the cellular level. Acid rain can also damage trees and acidifies soil reducing the yield.
4. **Wear and tear of materials:** Acidic components formed due to the reaction of pollutants in the atmosphere result in acid rain that has a tendency to corrode the building materials. PM has discoloring properties reducing aesthetic beauty and quality.

Given the above impacts, it is necessary to properly quantify the concentration of pollutants released into the atmosphere, track their dispersion, study the impacts and use various econometric tools to conduct valuation. While the ideal scenario in the current case would be monitor the emissions on site from the instance of the accident to understand the pollutant load released into the atmosphere. In the event of non-availability of monitored data, the stoichiometric results are used for valuation purposes.

For economic valuation, **Value Transfer Method (VTM)** has been used. In VTM, the valuation of extent of damages produced by same pollutants at one geographic place, can be transferred to another place using economic checks and balances. The base methodology, using the VTM, used for the current valuation has been taken from CSIR-NEERI's framework and publications^{1, 2}. The framework defines the use of VTM and the approach in detail. The base formula used in the analysis includes.

$$\begin{aligned} & \text{Damage Cost in India (I) (₹)} \\ & = \text{Damage Cost at Location } x \\ & * \text{PPP Adjustment Factor (I vs } x) * IR \end{aligned}$$

For valuation of SO_x and NO_x, UK-Defra values have been taken for calculating the monetary value of damages. Suitable econometric conversions including purchasing power parity (PPP) and inflation rate (IR) have been used to convert UK defra values to Indian values. The Indian values per tonne of emission hence arrived are used for valuation of damages

For Carbon dioxide, since it is GHG and can have a long term impact on environment, the social cost of carbon median values have been used as estimated by USEPA. Similar econometric factors including PPP and IR have been used to get the Indian values. For HCl, externalities estimates done for utility sector calculated by Fraunhofer Institute, Germany and Pace University, USA is referred due to limited availability of literature with suitable econometric adjustments as stated above. **Using the above equation and given literature, the damage value per tonne for all the pollutants have been calculated in Indian Rupees for the base year of 2019 and is given in Table 4. The consolidated table for environmental damages is given below:**

Table 4: Calculated damage cost (₹ Lakhs) for air pollution due to explosion & fire

Pollutant	SO₂	NO_x	HC_I	CO₂	Total
Pollutant Load (MT) (a)	59.4	60.4	90.5	348.6	558.9
Damage Value per tonne in Lakhs (b)	2.1989	2.1729	0.2189	0.0225	-
Damage Value in ₹ Lakhs (c=a*b)	130.6	131.2	19.8	7.8	289.5

From above table, the estimates, suggest a **total environmental damage of ₹ 2.895 Crores due to air pollution** caused by explosion and fire at M/s. Yashashvi Rasayan Pvt Ltd, Dahej.”

12. The report of the Chief Secretary is as follows:-

“In compliance thereof, this is to bring to the notice of Hon'ble Tribunal that M/s. Yashashvi Rasayan Pvt. Ltd., Gujarat, has obtained statutory clearances / licenses, viz. Environment Clearance (EC), Consent to Establish (CTE), Consent to Operate (CTO/CCA), Factory License, license for SO₂ storage from the competent authorities.

But, unit is yet to obtain permission for storage of Hydrogen cylinders from Petroleum & Explosives Safety Organization (PESO), which functions under the Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industries in the Central government.”

13. We now refer to the objections to the report by the Company by way of I.A. No. 364/2020. The Company has stated that it has set up chemical processing plant to manufacture *Dichloromethoxy benzoic acid* and it is 100% export-oriented. It has set up a factory at a plot admeasuring 71,109.9 sq. m. It has approval from the Directorate Industrial Safety, the Factory License and the PESO License. Electrical instrumentation and civil engineering work have been done by expert. EC has been granted. It has prepared SOP for tanker unloading. It has complied with the safety audit and other regulatory requirements and has not received any adverse comment from the regulators. It is carrying out mock drills and has employed professionally qualified staff. It has storage tanks. Tankers are received at the security Gate and sent to stores department. On the date of incident, two tankers were received at the Factory Gate and were to be uploaded at particular location but were wrongly emptied in other tanks. This resulted in mixing of nitric acid with DMS which led to the incident in question. The Company took the remedial action to control the situation. **11 persons died and 47 were injured.** There was a cyclone warning which led to evacuation of inhabitants of nearby villages. The Company has made the following payments to the heirs of the deceased: -

Name	Compensation amount suggested by the committee in the report Re	Amount actually paid by the company directly and through DM Re	Shortfall or Excess
<i>Rashmikan Chauhan</i>	1,15,42,738	54,58,122	60,84,616
<i>Naresh Prajapati</i>	40,67,216	55,39,645	(14,72,429)

<i>Kunal Patel</i>	40,15,862	56,95,927	(16,80,065)
<i>Suraj Singh</i>	20,77,980	29,77,385	(8,99,405)
<i>Munna Singh</i>	21,64,920	30,42,594	(8,77,674)
<i>Md. Azhar</i>	20,77,980	32,65,261	(11,87,281)
<i>Pramod Yadav</i>	20,77,980	38,85,075	(18,07,095)
<i>Arun Kori</i>	19,10,400	37,67,144	(18,56,744)
<i>Jayanta Mahata</i>	21,64,920	32,20,568	(10,55,648)
<i>Hari Chaudhry</i>	20,10,400	31,01,400	(10,91,000)
<i>Tripuraikumar Rai</i>	19,92,300	32,71,445	(12,79,145)
Total	3,61,02,696	4,32,24,566	

14. The remaining amount of Rs. 60,84,816/-, difference in the compensation assessed and required to be paid, is yet to be paid, in respect of deceased Rashmikan Chauhan. It will not recover the amount paid in excess of the amount assessed by the Committee. 22 persons received grave injuries while 28 had simple injuries. They have been paid respectively Rs. 5,00,000/- each and Rs. 2,50,000/- each. The Company has paid all the expenses incurred on treatment of all of them. No villagers were hurt or had suffered from any suffocation or other difficulties. Total 480 villagers had claimed damages to their properties. All were paid entire amount of claim. Total amount of Rs. 27,11,430/- has been paid on that account.

15. The Company has raised dispute about the following recommendations of the Committee on the subject of compensation:-

	On Account of	Committee Recommendation	Company Calculation
1	<i>Death Claims to 11 persons</i>	3,61,02,696	4,93,09,382
2	<i>Grievous injury to 22 persons</i>	1,10,00,000	1,10,00,000
3	<i>Simple injury to 28 persons</i>	65,00,000	65,00,000
4	<i>Villagers damage claim 480 persons</i>	27,11,430	27,11,430

5	Damage to environment	2,89,50,000	56,30,000
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16. Objections to the report are as follows:-

“REPORT OF COMMITTEE

1. Committee has specifically stated that there is no damage to environment on account of water pollution.
2. Company paid more compensation for 10 out of 11 deceased cases than was recommended by the committee. One case envisages outgo of about Re 61 lakhs.
3. **Committee has erred in applying formula for assessing damage to environment on account of air pollution. The methodology is not in question at this stage. According to the company an amount of Re 57 lakhs is assessment of the environmental damage.**
4. **Instead of paying to each individual an ex gratia payment for displacement, company suggests to make lump sum payment of Re 25 lakhs to the Panchayat of two villages where displacement took place and Panchayat to utilise this amount for water works construction or school improvement.”**

17. The claim in I.A. No. 50/2020 read with O.A. No. 24/2020 is as follows:

*“The hazardous chemicals which were released on account of the blast and fire got washed away on account of the rains into the GIDC drain and into the Narmada estuary. Narmada estuary is the source of livelihood of thousand of fisherman such as the applicants who are engaged in traditional pagadiya fishing and fishing through use of boats. This has resulted in fish kill after the accidents near the coast, which is at a distance of 800 m from the site of the company/ accident. **The applicants and the fishermen who fish on the coast and the Narmada estuary have lost out on one fishing season of 9 days which has resulted on a loss of Rs. 25,000 per boat for the season. There are 200 boards (licensed) of villages Luvara and Lakhingam and surrounding villages boats that are operational in Narmada river. So approximately the compensation towards livelihood loss comes to Rs. 50 lakhs for the boat fishermen. The pagadiya fishermen (per person) catching fish have lost 15 days fishing which fetches them Rs. 700/ per day so Rs. 10,500 X 492 fishermen = Rs. 51,66,000 (Rupees Fifty one lakh sixty six thousand). So the total compensation computed towards the fishermen comes to Rs. 51,66,000 + Rs. 50,00,000 = Rs. 1,01,66,000 (Rupees One Crore one lakh sixty six thousand). Further, the applicants continue to feel the effects of chemical effects on the air, water, land environment, which is affecting the applicants and other fishermen from surrounding villages in addition to villages of Luvara and Lakhigam.”***

18. The Report of District Legal Services Authority (DLSA) is as follows:

*“12. On 03.07.2020, the Hon’ble Member Secretary, Gujarat State Legal Services Authority, Ahmedabad paid second visit to Bharuch and **during the meeting with the SDM and Chief Medical Officer cum Civil Surgeon when the amount which was required to paid by the Company is calculated, it was found that actually the Company is supposed to make is Rs. 3 Crore 40 Lakhs. The said calculation is as under:***

28 persons with simple hurts x 2.5 lacs = Rs. 70,00,000/-

21 persons with grievous hurts x 05 lacs = Rs. 01,05,00,000/-

11 persons deceased x 15 lacs = Rs. 01,65,00,000/-

***-----
Total = Rs. 03,40,00,000/- (Rupees Three Crores Forty Lacs Only)”***

19. Some other steps are also mentioned but the same need not be mentioned for purposes of this order.

20. The comments of GPCB in its report dated 25.01.2021 merely gives the version given to it by the Company, including the amount of compensation paid and assessed and also the steps taken by the Company to avoid occurrence in future, as follows:-

“

1. Tank farms for incompatible chemicals are separated. Two tank farms are now made. One will exclusively house acid tanks only. Other tank farm will house other chemicals.

2. Unloading of tankers is provided with AUTO CONTROL equipment which will analyse density of the input material and if it matches with the density of material inside the storage tank, then only will allow inflow into the tank.

3. For chemicals have similar densities, sound velocity instruments are provided which will allow inflow after due verification.

4. Management control for all input materials is strengthened and double check system is introduced.

5. A qualified manager is appointed for tank farms.

6. Pressure and temperature measurement instruments are fitted in every tanks. The readings are connect to Control Room.

7. All underground tanks are also provided with all these measures.

8. *In addition to dyke walls, underground tank has been provided for any collection of possible leakage . This will avoid spilled material flowing over4ground causing any danger.*

9. *Fresh HAZOP study is carried out for each and every chemical handling.”*

21. The report of the MoEF&CC only mentions the statutory framework under the 1989 and 1996 Rules and the Red Book by the MoEF&CC updated in November, 1990. It is further stated that the MoEF&CC is taking following actions:-

“

- *Committees have been constituted for 'Preparation of Restoration Plan' through CPCB and District Administration, and 'Finalization of Compensation'*
- *Action is being taken for revamping of industrial monitoring mechanism, in line with the previous directions of Hon'ble NGT O.A. No. 73/2020, Gas Leak at IG Polymers Chemical Plant in RR Venkatapuram Village, Visakhapatnam in Andhra Pradesh.*
- *Consideration of the Technical and Administrative/ Regulatory Framework Recommendations given by High Power Committee (HPC), which also include general recommendations on operation of hazardous industries/ industries handling hazardous chemicals as well as industries operating in residential areas, is under examination.*

15. That in light of the actions already initiated by IA (Monitoring) division, MoEF&CC for compliance of Hon'ble Tribunal's directions with regard to 'Revamping of Industrial Monitoring Mechanism', a response on various actions undertaken is under formulation and the same shall be submitted for perusal of the Hon'ble Tribunal in the matter of OA No 837 of 2018 in the matter of Sandeep Mittal vs Union of India.”

22. From the above resume, we find that the issues which need to be considered are the directions on the subject of compensation and for future safety concerns.

23. We may now note the rival contentions of the parties. On the subject of compensation, learned Senior Counsel for the applicant submitted that the compensation assessed by the Committee with added deterrence element needs to be secured to the victims. He has relied upon the

judgment of the Hon'ble Supreme Court in Uphaar Tragedy Case⁷. It is submitted that even though the matter is governed by principle of 'Absolute Liability' in terms of the judgment of Hon'ble Supreme Court in M.C. Mehta v. UOI & Ors.⁸, the element of deterrence needs to be applied, having regard to the conduct of the Company in taking false stand to avoid legal consequences of its negligence act. As found by the Committee, the Company has made a false statement and tried to tamper with the evidence. Further conduct of the Company in continuing production even after the incident, showing no concern for the loss of lives, shows that its sole object is earning. The Committee has found that the consumption of raw material was much more than what was mentioned in the record. The Company was using H₂ but its purpose was not shown and possibly it was being produced for something for which it had no authority. The tanker unloading checklist was not found. The explanation of the Company in the letter dated 10.06.2020 is that it had committed mistake in giving the information earlier. The Company had changed the word 'tank' to 'tanker'. To sum up, learned counsel relied upon and supported the findings in the report to the effect that:

- the unit was engaged in hazardous activities (para 10),
- there was violation of safety norms in permitting storage of incompatible chemicals (para 14 to 17),
- cause of the incident is mishandling of chemicals in storage tanks and required safety precautions were not taken in unloading hazardous chemicals as the officials of the Company were not duly qualified; it was not mere accident, (para 19 and 81),

⁷ (2011) 14 SSC 481

Para 104. Constitutional courts' actions not only strive to compensate the victims and vindicate their constitutional rights, but also to deter future constitutional misconduct without proper excuse or with some collateral or improper motive. The constitutional courts can in appropriate cases of serious violation of life and liberty of the individuals award punitive damages. However, the same generally requires the presence of malicious intent on the side of the wrongdoer i.e. an intentional doing of some wrongful act.

⁸ (1987) 1 SCC 395

- there was no required PESO licence (para 72),
- steps mentioned by the GPCB in para 20 of this order were not taken earlier by which the accident could have been avoided,
- there was emission of VOCs causing air pollution (para 21) on account of combustion of chemicals (para 80),
- except the heirs of the deceased, compensation payment to the injured and other affected was not in terms of the scale laid down by this Tribunal in interim orders, there was list of 3241 persons displaced on account of the incident for more than 9 hours from 2.30 pm to 12 midnight, 375-465 houses were damaged (para 83),
- there was manipulation of record by the Company (para 54.6).
- Liability for damage to the environment has been assessed on tangible material (para 2.3 of the additional report and table 4).
- The Committee has made detailed recommendations for steps required to be taken to avoid such incidents including Technical, procedural, administrative, statutory monitoring, managerial, safety audits, medical facilities, precautions in SEZ/industrial zones by developing green belts and buffer areas (para 92).

24. It is further submitted that there is no merit in the objections of the Company noted in para 16 of this order. It was submitted that deterrent element be added to the assessed compensation and the deficit amount between the compensation payable and paid so far be now deposited. Compensation for the injured and displaced has not been quantified by the Committee though it is mentioned that varying amounts have been paid but it was not clear that the same is on scale laid down by this Tribunal vide orders dated 8.6.2020 read with order dated 30.7.2020. IA 364/2020 is not maintainable after order dated 30.7.2020. Thus, the conduct of the Company is unfair and in defiance of orders of this

Tribunal, even after the Hon'ble Supreme Court declined to interfere, except for permitting moving this Tribunal for modification. Having moved the Tribunal and on prayer for modification having been rejected, the Company ought to have complied. Compensation to the displaced and the injured needs to be paid atleast at the rate mentioned in the earlier orders of this Tribunal, without prejudice to seeking enhanced compensation.

25. Learned counsel for the Company on the other hand submitted that it has paid compensation of Rs. 3.10 Crores and is willing to deposit further amount of Rs. 1.29 Crores within two days as it has objection to the remaining compensation. It was submitted that the incident has no nexus with the incident of fish kill on 12.06.2020. The Company has been following due process and is operating in SCZ area where no material comes without documentation. It is 100% export unit and its products in only used for aerial spray in big farms and is not meant for domestic consumption. It has been lying closed for the last eight months and has taken steps to prevent future occurrences. The tanks which were incompatible have now been changed. The deaths are more on account of anxiety and running away of the employees towards the Gate, where the incident took place, than on account of the incident. **The incident is result of mixing up of two incompatible chemicals i.e. nitric acid and DMS.** Since the tank was full, measures to neutralize the situation could not be immediately taken. The compensation was not paid to the villages because the necessary repairs were carried out by spending a sum of Rs. 27 Lakhs. Injured have been paid and were treated in a best possible hospitable by spending a sum of Rs. 1.1 Crores. There is no permanent injury or damage in the nearby area. Displacement was because of cyclone. The amount of Rs. 60 Lakhs paid in excess of compensation assessed by the Committee to the heirs of one of the deceased will not be

recovered back. Hydrogen is not used in the process and therefore, there no license is required in that regard, as wrongly stated by the Chief Secretary. Hydrogen was brought only to neutralize the chemical reaction.

26. Learned counsel for the CPCB submitted that it is not a case where negligence is only on the part of staff but also of the Company, as found by the Committee. The Committee has found that persons handling the hazardous chemicals were not qualified. The unit is major accident hazard installation and has to follow stringent norms. Learned Counsel for the GPCB submitted that there is negligence of the Company which led to second incident on 12.06.2020, as found by the Committee. The steps which have been taken later should have been followed earlier.

27. We have duly considered the rival submissions and also perused the written submissions filed by the applicants which are reiteration of the submissions already noted above.

28. We do not find any tangible objections to the report of the Committee which stand accepted. The recommendations of the Committee need to be duly implemented which needs to be overseen by the statutory regulators. We note that in the recent past the Tribunal has come across the number of incidents of leakage of gases and handling of hazardous chemicals.⁹ On

⁹ 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 (OA No. 73/2020, In re: Gas Leak at LG Polymers Chemical Plant in RR Venkatapuram Village Visakhapatnam in Andhra Pradesh);

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 (OA No. 22/2020(WZ) (Earlier OA 22/2020) (WZ), Aryavart Foundation through its President vs. Yashyashvi Rasayan Pvt. Ltd. & Anr.);

iii. 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 (OA No. 43/2020(EZ), Bonani Kakkar vs. Oil India Limited & Ors.).

iv. Orders dated 06.07.2020 and 22.12.2020, 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 (OA No. 106/2020, News item published in the local daily "Economic Times" dated 30.06.2020 titled "Another Gas Leakage at Vizag Factory kills two, critically injures four...");

investigation, this Tribunal has found that most of the accidents are result of non-compliance of laid down safety norms under the 1989 Rules and the Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996 [1996 Rules]. There is, thus, need for the establishments handling hazardous chemicals to strictly follow the laid down norms, which need to be overseen by the statutory regulators.

29. We also uphold the compensation assessed by the Committee for the damage to the environment and in respect of the dead. We do not find any merit in the plea that displacement was on account of cyclone warning. This plea was never taken before this Tribunal during hearing on 8.6.2020 and 30.7.2020 or even before the Hon'ble Supreme Court. Only plea was that displacement was for few hours which did not justify compensation @ Rs. 25000/- each. IA 364/2020 filed by the Company is not maintainable as far as the scale of compensation is concerned in view of order dated 30.7.2020 which was never challenged. The application is in the nature of second review. The action of the Company is not complying with the order is not fair and is clear defiance of binding orders of this Tribunal. There is no justification for seeking permission for paying even

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- v. Orders dated 08.07.2020 and 22.12.2020, 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 (OA No. 108/2020, News item published in the "Indian Express" dated 01.07.2020 titled "Tamil Nadu Neyveli boiler blast: 6 dead, 17 injured") and;
 - vi. Orders dated 23.07.2020 and 22.12.2020, in relation to incident of **fire engulfed the chemical plant of Visakha Solvents Ltd**, Vizag on 13.07.2020 at Ramky CETP Solvents building in Pharma City resulting in injuries (OA No. 134/2020, News item published on 13.07.2020 in the local daily named "India Today" titled "Massive fire engulf Vizag chemical plant, explosions heard, injuries reported").
 - vii. Order **dated 18.12.2020**, in relation to incident of **explosion in a plastic recycling factory at Sujapur in Malda on 1.12.2020** resulting in death of six persons, including two minors and serious injuries to four persons (OA No. 272/2020, News item published in the "Times of India" dated 20.11.2020 entitled "Six killed as blast tears through Malda Plastic recycling factory").
 - viii. Order dated **18.12.2020**, in relation to incident of **methane gas leak in a sugar factory** called Lokenete Bapurao Patil Agro Industries Ltd. in Mohol Taluka of Solapur District, Maharashtra on 21.11.2020 resulting in deaths and injuries and other damage (OA No. 274/2020, News item published in the "Indian Express" dated 23.11.2020 entitled "Maharashtra: Two Killed, eight injured in methane gas leak in sugar factory").

undisputed compensation, as no such permission is required. Injured and displaced having been identified, they have to be paid in terms of orders of this Tribunal which has to be ensured by the Collector. The report of the District legal authority also does not show compliance in that regard. Thus, the company needs to pay remaining amount to the heirs of the deceased in terms of compensation assessed by the Committee but if compensation in respect of any individual at higher rate has been paid by the Company by itself, the same will not be adjusted or recovered, as stated by learned Counsel for the Company itself. Similarly, injured and displaced need to be paid irrespective of the expenses incurred on medical treatment as compensation has been assessed by this Tribunal only for trauma faced, including pain and suffering and not for cost of treatment, which is a separate head. Payment said to have been made to the Sarpanch is not shown to be at the scale fixed by this Tribunal. Deficit amount be calculated and paid within one month by way of deposit with the Collector, failing which the same be recovered by coercive means. IA 364/2020 stands disposed of accordingly. IA 50/2020 and OA 24/2020(WZ) by fisherman will stand dismissed as the nexus of fish kill with the activities of the Company is not established.

30. With regard to claim for punitive damages based on the observations in *MCD v. Uphaar Cinema case* (supra), we have considered the observations of Justice Raveendran in paras 65 to 71¹⁰ and Justice

¹⁰ 65. While awarding compensation to a large group of persons, by way of public law remedy, it will be unsafe to use a high income as the determinative factor. The reliance upon *Nilabati Behera* [(1993) 2 SCC 746 : 1993 SCC (Cri) 527 : AIR 1993 SC 1960] in this behalf is of no assistance as that case related to a single individual and there was specific evidence available in regard to the income. Therefore, the proper course would be to award a uniform amount keeping in view the principles relating to the award of compensation in public law remedy cases reserving liberty to the legal heirs of the deceased victims to claim an additional amount wherever they were not satisfied with the amount awarded. Taking note of the facts and circumstances, the amount of compensation awarded in public law remedy cases, and the need to provide a deterrent, we are of the view that the award of Rs 10 lakhs in the case of persons aged above 20 years and Rs 7.5 lakhs in regard to those who were 20 years or below as on the date of the incident, would be appropriate. We do not propose to disturb the award of Rs 1 lakh each in the case of injured. The amount awarded as compensation will carry interest at the rate of 9% per annum from the date of the writ petition as ordered by the High Court, reserve liberty to the victims or the LRs of the victims as the case may be to seek higher

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- remedy wherever they are not satisfied with the compensation. Any increase shall be borne by the licensee (theatre owner) exclusively.
66. Normally, we would have let the matter rest there. But having regard to the special facts and circumstances of the case we propose to proceed a step further to do complete justice. The calamity resulted in the death of 59 persons and injury to 103 persons. The matter related to a ghastly fire incident of 1997. The Victims' Association has been fighting the cause of victims for more than 14 years. If at this stage, we require the victims to individually approach the civil court and claim compensation, it will cause hardship, apart from involving huge delay, as the matter will be fought in a hierarchy of courts. The incident is not disputed. The names and identity of the 59 persons who died and 103 persons who were injured are available and is not disputed.
67. Insofar as death cases are concerned the principle of determining compensation is streamlined by several decisions of this Court. (See for example *Sarla Verma v. DTC* [(2009) 6 SCC 121 : (2009) 2 SCC (Cri) 1002 : (2009) 2 SCC (Civ) 770] .) If three factors are available the compensation can be determined. The first is the age of the deceased, the second is the income of the deceased and the third is number of dependents (to determine the percentage of deduction for personal expenses). For convenience the third factor can also be excluded by adopting a standard deduction of one-third towards personal expenses. Therefore just two factors are required to be ascertained to determine the compensation in 59 individual cases. First is the annual income of the deceased, two-thirds of which becomes the annual loss of dependency; and second, the age of the deceased which will furnish the multiplier in terms of *Sarla Verma* [(2009) 6 SCC 121 : (2009) 2 SCC (Cri) 1002 : (2009) 2 SCC (Civ) 770] . The annual loss of dependency multiplied by the multiplier will give the compensation. As this is a comparatively simple exercise, we direct the Registrar General of the Delhi High Court to receive applications in regard to death cases, from the claimants (legal heirs of the deceased) who want a compensation in excess of what has been awarded, that is, Rs 10 lakhs/Rs 7.5 lakhs. Such applications should be filed within three months from today. He shall hold a summary inquiry and determine the compensation. Any amount awarded in excess of what is hereby awarded as compensation shall be borne exclusively by the theatre owner. To expedite the process the claimants concerned and the licensee with their respective counsel shall appear before the Registrar without further notice. For this purpose the claimants and the theatre owner may appear before the Registrar on 10-1-2012 and take further orders in the matter. The hearing and determination of compensation may be assigned to any Registrar or other Senior Judge nominated by the learned Chief Justice/Acting Chief Justice of the Delhi High Court.
68. As far as the injured are concerned if they are not satisfied with the sum of Rs 1 lakh which has been awarded it is open to them to approach the civil court for claiming higher compensation and if they do so within 3 months from today, the same shall be entertained and disposed of in accordance with law. It is not possible to refer the injury cases for summary determination like death cases, as the principles are different and determination may require a more detailed enquiry.
69. We may next deal with the question of award of punitive damages of Rs 2,50,00,000 against the licensee. Before examining whether such punitive damages could be awarded at all, we have to notice the apparent mistake in arriving at the sum of Rs 2.5 crores. The High Court has stated that the licensee should be made liable to pay punitive damages to the extent of profit which it would have earned by selling tickets in regard to extra seats unauthorisedly and illegally sanctioned by the authorities and installed by the licensee. The High Court has not stated the arithmetical calculation of arriving at Rs 2,50,00,000 but it has indicated that the said sum has been assessed as the income earned by them by selling tickets for additional 250 seats between 1979 and 1996. The High Court has apparently calculated the ticket revenue at the rate of Rs 50 per ticket for 52 additional seats for three shows a day to arrive at a sum of Rs 7800 per day. For 17 years, this works out to Rs 4,83,99,000. Presumably, the High Court deducted Rs 2,33,99,000 towards entertainment tax, etc., to arrive at Rs 2.5 crores as profit from these additional seats.
70. Initially the seats were 250. Forty-three additional seats were sanctioned on 30-9-1976. Subsequently, the additional seats were cancelled. However, the Delhi High Court permitted the continuance of such number of seats which were permissible as per Rules. Therefore, all the 52 seats cannot be held to be illegal. What were illegal seats were the 15 seats that were added by securing an order dated 4-10-1980. The remaining 37 seats were found to be valid by the authorities. Therefore, if at all the licensee is to be made liable to reimburse the profits earned from illegal seats, it should be only in regard to these 15 seats and the eight seats in the Box which was the cause for closing one of the exits. Insofar as the eight seats in the owner's Box, though it is alleged that they were intended to be used only as complimentary seats, for the purpose of award of punitive damages, they are treated on a par with other balcony seats. The High Court also wrongly assumed that the ticket value to be Rs 50 from 1979 to 1996, because it was Rs 50 in the year 1997 for a balcony seat. Another erroneous assumption made is that for all shows on all the days, all these additional seats would be fully occupied. On a realistic assessment, (at a net average income of Rs 12 per seat with average 50% occupancy for 23 seats) the profits earned from these seats for 17 years would at best be Rs 25,00,000. Be that as it may.
71. We may next consider the appropriateness and legality of award of punitive damages. In this context, we may refer to the decision in *M.C. Mehta v. Union of India* [(1987) 1 SCC 395 : 1987 SCC (L&S) 37] wherein this Court considered the question as to what should be the measure of liability of an enterprise which is engaged in a hazardous or inherently dangerous industry, if by reason of an accident occurring in such industry, persons die or are injured. This Court held: (SCC pp. 420-21, paras 31-32):

“31. ... in a modern industrial society with highly developed scientific knowledge and technology where hazardous or inherently dangerous industries are necessary to carry out part of the developmental programme, this rule evolved in the 19th century at a time when all these

Radhakrishnan in paras 96 to 105. It was held that damages can be granted even against public authorities for violation of fundamental rights though there was difference of opinion as to the situations when public authorities are liable (with which issue we are not concerned in the present matter). In para 65, it was observed that in cases of mass torts, in a public law remedy, threshold amount can be awarded straightaway, leaving the parties for higher claims to regular remedies. In *M.C. Mehta (supra)*, it was observed in paras 31 to 32 that liability of person engaged in hazardous

developments of science and technology had not taken place cannot afford any guidance in evolving any standard of liability consistent with the constitutional norms and the needs of the present day economy and social structure. We need not feel inhibited by this rule which was evolved in the context of a totally different kind of economy. Law has to grow in order to satisfy the needs of the fast-changing society and keep abreast with the economic developments taking place in the country. As new situations arise the law has to be evolved in order to meet the challenge of such new situations. Law cannot afford to remain static. We have to evolve new principles and lay down new norms which would adequately deal with the new problems which arise in a highly industrialised economy. We cannot allow our judicial thinking to be constricted by reference to the law as it prevails in England or for the matter of that in any other foreign country. We no longer need the crutches of a foreign legal order. We are certainly prepared to receive light from whatever source it comes but we have to build our own jurisprudence and we cannot countenance an argument that merely because the law in England does not recognise the rule of strict and absolute liability in cases of hazardous or inherently dangerous activities or the rule laid down in *Rylands v. Fletcher* [(1868) LR 3 HL 330 : (1861-73) All ER Rep 1 (HL)] as developed in England recognises certain limitations and exceptions, we in India must hold back our hands and not venture to evolve a new principle of liability since English courts have not done so. We have to develop our own law and if we find that it is necessary to construct a new principle of liability to deal with an unusual situation which has arisen and which is likely to arise in future on account of hazardous or inherently dangerous industries which are concomitant to an industrial economy, there is no reason why we should hesitate to evolve such principle of liability merely because it has not been so done in England. We are of the view that an enterprise which is engaged in a hazardous or inherently dangerous industry which poses a potential threat to the health and safety of the persons working in the factory and residing in the surrounding areas owes an absolute and non-delegable duty to the community to ensure that no harm results to anyone on account of hazardous or inherently dangerous nature of the activity which it has undertaken. The enterprise must be held to be under an obligation to provide that the hazardous or inherently dangerous activity in which it is engaged must be conducted with the highest standards of safety and if any harm results on account of such activity, the enterprise must be absolutely liable to compensate for such harm and it should be no answer to the enterprise to say that it had taken all reasonable care and that the harm occurred without any negligence on its part. ... Such hazardous or inherently dangerous activity for private profit can be tolerated only on condition that the enterprise engaged in such hazardous or inherently dangerous activity indemnifies all those who suffer on account of the carrying on of such hazardous or inherently dangerous activity regardless of whether it is carried on carefully or not. This principle is also sustainable on the ground that the enterprise alone has the resource to discover and guard against hazards or dangers and to provide warning against potential hazards. We would therefore hold that where an enterprise is engaged in a hazardous or inherently dangerous activity and harm results to anyone on account of an accident in the operation of such hazardous or inherently dangerous activity resulting, for example, in escape of toxic gas the enterprise is strictly and absolutely liable to compensate all those who are affected by the accident and such liability is not subject to any of the exceptions which operate vis-à-vis the tortious principle of strict liability under the rule in *Rylands v. Fletcher* [(1868) LR 3 HL 330 : (1861-73) All ER Rep 1 (HL)] .

32. We would also like to point out that the measure of compensation in the kind of cases referred to in the preceding paragraph must be correlated to the magnitude and capacity of the enterprise because such compensation must have a deterrent effect. The larger and more prosperous the enterprise, the greater must be the amount of compensation payable by it for the harm caused on account of an accident in the carrying on of the hazardous or inherently dangerous activity by the enterprise.”

activity for business is absolute and should be deterrent linked to the financial capacity. Remedy under section 15 of the NGT Act, 2010 for compensation to the victims of environmental damage is summary, as procedure under section 19 is summary. We are therefore, in the circumstances of the present case, while not ruling out applicability of principle of punitive damages in appropriate cases, inclined to award compensation as suggested by the Committee, which is based on principle of restitution at scale laid down in *Sarla Verma v. DTC* (2009) 6 SCC 121, i.e. considering age of the victim, income and loss suffered, without prejudice to the remedy of the victims to individually claim higher amounts in any other appropriate proceedings, as per law. Section 15 does not exclude other remedies and is not the exclusive remedy, as shown by sub section 2 and 4 of the said section. After taking into account deposit already made in respect of each item of compensation, the deficit amount may be deposited within one month with the District Magistrate for disbursements. Since the Committee has not given its specific recommendations about the quantum of compensation about the injured and the displaced. orders of this Tribunal dated 8.6.2020 read with order dated 30.7.2020 will govern the situation. The company may comply with the same accordingly. In default of payment as above, the District Magistrate may take coercive measures. This is without prejudice to any higher amount being separately claimed in any other appropriate proceedings. The State PCB may not allow the functioning of the unit till compliance.

31. As already observed, the Unit must take all safety measures in terms of the recommendations of the Committee which may be overseen by the statutory regulators. This order will not affect any other pending proceedings which may be dealt with by concerned authorities in

accordance with law. The statutory authorities may implement other recommendations of the Committee which may be coordinated by the CPCB through other concerned authorities.

32. In view of frequent accidents resulting in deaths and injuries, the Chief Secretaries of all the States/UTs may evolve a mechanism to ensure that the companies dealing with hazardous substance must forthwith pay compensation for deaths and injuries to the victims at least as per Workmen Compensation Act, 1923 wherever applicable or the principle of restitution laid down in *Sarla Verma (supra), National Insurance Company Ltd. v. Pranay Sethi*, (2017) 16 SCC 680 to the victims either directly or through the District Magistrate.

33. Conduct of safety audits of all establishments having potential for such accidents may be ensured. All States/UTs may also ensure availability of healthcare facilities in the vicinity of such establishments. PCB and DM must assess cost of restoration of environment which should be recovered from company and spent on such restoration. The States and UTs in accordance with 1989 and 1996 Rules need to step up vigilance, surveillance and monitoring to avert such accidents. Preparedness to meet such eventualities be ensured. Regular mock drills may be ensured in respect of onsite and offsite emergency plans. We may also refer to the directions issued by this Tribunal to the MoEF&CC and all the States/UTs on the subject of strengthening regulatory and oversight measures, vide order dated 01.02.2021 in OA 837/2018, *Sandeep Mittal vs. Ministry of Environment, Forests & Climate Change & Ors.*

34. We place on record our appreciation for the task executed by the Committee. This observation may be conveyed to the members of the Committee by the CPCB. A copy of this report may be kept on the websites

of CPCB as well as the State PCB for the purposes of reference for atleast six months.

A copy of this order be forwarded to the MoEF&CC, CPCB, the Chief Secretary Gujarat, the State PCB, the District Magistrate, Bharuch and the District Legal Services Authority, Bharuch, by mail for compliance.

The applications are disposed of.

Adarsh Kumar Goel, CP

S.K. Singh, JM

Dr. Nagin Nanda, EM

February 03, 2021
O.A. No. 85/2020 &
O.A. No. 24/2020 (WZ)
A