

Bhopal 1984 Disaster: A Gas Leak Tragedy and its Effects on the People

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ABSTRACT: *A gas tragedy which occurred on the night of December two and three of 1984 that led to immediate deaths of more than thirty eight hundred people in Bhopal, India. This was so huge that it caused significantly high premature deaths immediately and permanently ailments for thousands of people. The company Union Carbide India limited (UCIL) doesn't even take the proper responsibilities for the victims involved and also tried to dissociate from the tragedy to prevent from the legal responsibilities. This paper analyses all these facts and the reasons which led to this disaster. What was the role of the company, Indian authorities, the government and Supreme Court in the whole case? How it influences the lives of people who live in Bhopal and other aftermaths. This is done by referring to the official reports and research papers written on this disastrous incident. Paper also considers today's scenario after 32 years of the gas tragedy and highlights how the government has taken steps as precaution and to handle the situation if it occurs in future.*

KEYWORDS: *Bhopal, Disaster, Tragedy, Environmental degradation, Gas leakage, India, Pesticide Plant.*

INTRODUCTION

In Bhopal on the night of two to three December 1984 more than half million people were directly exposed in the toxic methyl isocyanate (MIC) pesticide gas and other leaked chemicals that was leaking because of the leniency and carelessness of a pesticide plant UCIL established in the Bhopal. Considering the estimation, around ten thousand people died under the two weeks after the leakage started, thousand suffered permanent ailments and severe health conditions and hence numbers of victims continued to die thereafter. The influence of the gas was so severe that even after years the new born infants were suffering from health conditions and permanent disabilities. It becomes really important to learn about the case and understand the situation and conditions that made it so critical for the state. The mishandlings, errors made, the protocols, on spot decisions, precautions, and legal actions everything must be studied so that the people and the nation must stay cautious and prepared for any possible tragedy like this. Since chemical plants are common in states so proper knowledge and rules regulations must be followed by every shareholder to avoid any such situation in the future. Refer the figure one [1] and to two to understand by the pictorial depiction how severe was the Bhopal gas accident and sever were the effects on people and on the city

The morning of Bhopal on third December 1984 was not normal as a heavy gray cloud was covering the whole sky and was rolling around with the slow winds. It was a very poisonous cloud formed of methyl isocyanate (MIC) from the pesticides UCIL Plant established in the capital state of Madhya Pradesh, India. The cloud emerged because of the uncontrollable release of around forty tons of hazardous gas which spreader gradually throughout the surroundings of the city. The accident was so severe that its effects on the city became a nightmare for everyone and unfortunately it still affects people with no end. The residents of the city start panicking as soon as the heavy clouds of suffocating gas approached towards them thousands of people start running on the dark roads and streets, hundreds of victims start arriving at the hospitals with problems like breathlessness and blindness. The most affected human organ was eyes, the lungs, muscles and the brain. It even affected the gastro-intestinal functionality, severe neurological influence, reproductive organs and the immunity system of people were severely damaged in victims who survived. The devastated night end up in a scene where human and animal dead bodies were blocking the

streets of the city, heavy smog around the streets, smelly and black burning atmosphere. As estimated ten thousand people immediately died and half a million population were severely affected with serious symptoms [2]. As shown in Figure 1 the percentage of dental practitioners and the disorders reported by them.

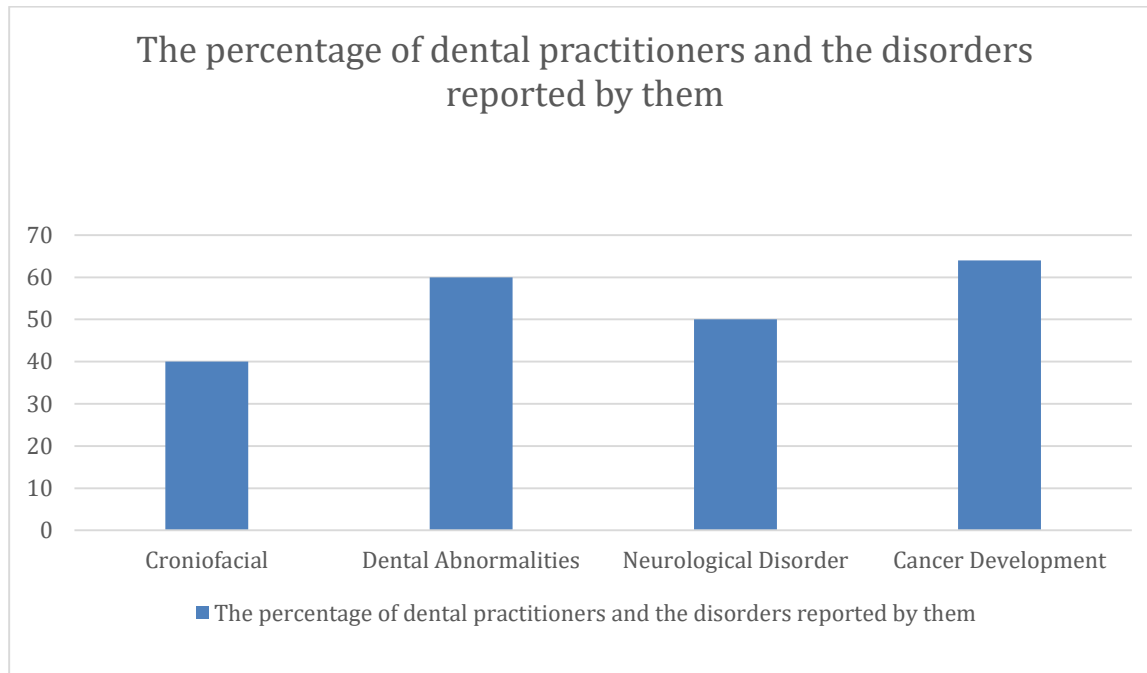


Figure 1: The percentage of dental practitioners and the disorders reported by them

The plant was owned by UCIL an American company, with the Indian Government banks and 49.1% stakeholders was the Indian public. After the tragedy and demand of people in 1989, the UCC agreed to pay \$470million dollars as fine and compensation to settle and halt the litigation charges applied on the company because of the reasons which led to this tragic disaster. Later in 1994, the UCC sold its stakes of UCIL to the Eveready Industries India Limited (EIL), and then it subsequently merged with the McLeod Russel limited, India. EIL ended the clean-up of the accidental site finally in 1998, then by terminating the hundred years lease they transferred the rights to the MP's state government officially. In 2001, 17 years after the tragedy a chemical company DOW purchased the UCC. And in June of 2010, total 7 ex-workmen were convicted for causing the death of so many people due to carelessness and negligence of them including the former chairman of UCIL and as punishment imprisonment of two years and a strict fine of two thousand dollars approx. \$2,000 each was the maximum allowed punishment according to the Indian judiciary law. 8 other convicted ex-employees died even before the final judgement has been given. This tragedy is the biggest in the history of industrial disasters in India and one of the tragedies in the world [3].

Research Question

- What is the Bhopal gas leakage tragedy that is considered as one of the biggest industrial Tragedies?
- How this tragedy influences the lives of citizens of Bhopal? What is the environmental degradation this tragedy brought with it that Bhopal is still suffering from?
- What are the legal changes India adopted for the deployment of chemical plants? Do these laws and regulations are being considered and followed properly by the industry now?

LITERATURE REVIEW

Bhopal tragedy was such a big industrial disaster that its influences can still be seen in that respective area where this pesticide plant company was located and hence this became a greater interest of research for the international as well as Indian researchers. There are numerous research papers available discussing the tragedy from different aspects of the environment, social, government and industry also. One of them is

“The Bhopal gas tragedy—A perspective” written by R.K. Binary and Swaraj Puri the Ex-Mayor of Bhopal, Madhya Pradesh, India and Director General of Bhopal Police respectively. The paper narrates the whole situation, happenings and the other handling aspects related to the on spots decisions and there later consequences. That had to be made with the hope that no such accident happens anywhere [4].

Another paper with the title “The Bhopal disaster and its aftermath: a review” written by Edward Broughton. This review paper highlights the facts that weak protocols and policies towards the chemical plants lead to this tragedy. Since the tragedy happened India has been in the experienced rapid industrialization. While some positive changes in government policy and behavior of a few industries have taken place, major threats to the environment from rapid and poorly regulated industrial growth remain. Widespread environmental degradation with significant adverse human health consequences continues to occur throughout India[2] [5].

Paper entitled “The unfolding of Bhopal disaster” written by Ex-MIC Plant Operator of UCIT Mr. T.R. Chauhan. The paper presents the concerns related to the facts that the authors has knowledge about as an ex- employee. The merciless cost-cutting severely affecting materials of construction, maintenance, training, manpower and morale resulted in the disaster that was waiting to happen. Significant differences between the West Virginia, USA plant and the Bhopal, India plant show the callous disregard of the corporation for the people of the developing countries [6]. The narrative below, if given a proper thought by the management and governments, should help in significantly reducing industrial accidents.

METHODOLOGY

1. Design:

1.1. What factors lead to this huge leak and why was it uncontrollable?

The initial investigations by the official authorities’ community conducted by the Indian government and the teams of UCC noticed that a significantly high volume of liquid water had been presented in the MIC tanks. Which caused a kind of chemical reaction that increased the pressure and enforced the release of valves to get open and it ultimately allowed the leakage of gas in open. The conclusion was released by Indian government after more than two years of investigation of the tragedy, the final documentation was 70,000 pages long. The lengthy documents findings include the scientific and the legal investigations details. The declared cause of gas leakage concluded was the ‘sabotage’. The UCC’s investigation proceeded and proved the situation with the evident virtual certainty according to that the cause of disaster was direct introduction of the water content into the gas Tank 610 possibly through a passage hose that was directly connected with the gas tank.

1.2. The Theories:

- The execution of cause of tragedy is only possible due to negligence of some insider workers. This arises the theory of the ‘disgruntled employee’ in that plant. It could be an employee who is not happy or has grudges for the UCC which makes that employee permit the storage of water into the Tanks. So someone on purpose intentions or a serious grudges of the person triggered this tragic disaster in the city.
- The other popular version is from the point of view of the ‘Corporate Negligence’ that argues that the cause of this disaster is a vigorous combination of negligence, under-maintained plant and also a decaying facilities leads to vulnerable situations, safety negligence as safety concerns were not examined and estimated properly, and of course the undertrained and weak workforce in the plant lead to enhancement in severity of situations, as the concluding actions of workers when leakage starts compelled the adverse effect and the decision to introduce the water penetration inside the MIC tanks and also in the absence of properly working safeguards. Figure 2 shows a collage some tragic pictures.

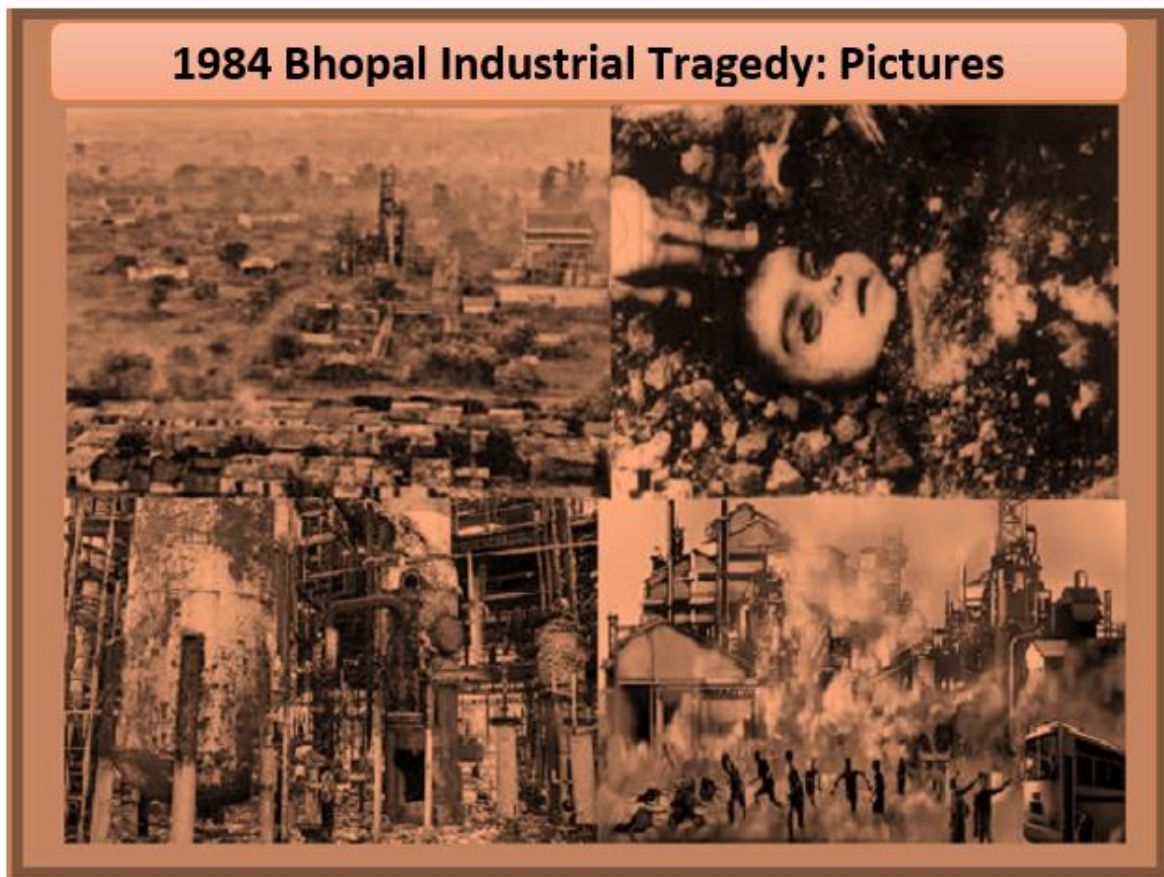


Figure 2: A collage of some tragic pictures of the Bhopal gas accident and the famous picture Bhopal hazardous gas victim that died tragically. The heavy smog rolling around the sky and screams and dead bodies around the streets of the city.

1.3. Why it is not yet sensed as a closure?

Even after 32 years of the world's most tragic industrial disaster, the victims and the affected resident people are yet waiting to see any appropriate and comprehensive step or efforts to clean and minimize the groundwater contamination which happened around the areas near the disaster site. This is so unfortunate that for the victims this prolonged disaster is not yet ended but is still ongoing in various offerings. The NGOs and Organizations which are still fighting for the comprehensive justice of the victims of Bhopal gas tragedy victims. They are consistently and repeatedly presenting the aftermath and severe effects of the disaster which is still making the victims suffer and also the ongoing and future generations that were born after the Bhopal tragic incident. The children are still born with severe symptoms of health conditions and health risks that occur because of the poisons and hazardous gases that were leaked in air from the tanks of the pesticide factory. To understand more about it refer to figure 2 which depicts the immediate severe effects by this toxic gas on people [7].

The claims by these organizations are pointing to the fact that abandoning the factory by the corresponding corporation causes severe effects and is still making people sick and killing them. The maiming problem in people is common due to the poisonous groundwater in the city which becomes even more severe because of the irresponsible and careless dumpings of the polluted and toxic waste chemicals and products during the 14 years long operational activities of the plant in prior times of the disaster. The ignorance of official authorities and government is also responsible for these worst conditions. Hence these organizations also criticized the government authorities for not focusing the working and operational activities and environments but for only considering the toxicity of about a thousand forty five tons of toxic waste product that was kept stored inside the plant premises of the UCIL. The authorities completely ignored these releasing waste by the factory in open without proper reuse or rectification. Even the locals boldly claim that there are three main local ponds where this industrial waste was dumped and released

by the factory between the long time of 1977 and 1984 of globalization. Moreover there were 21 more identified locations present inside the plant factory which was used to bury the industrial waste.

2. Sample:

2.1. Similar accidents in India post the tragic incident of Bhopal?

After Bhopal case there was a realization among people that with the globalization and industrial development if the industrial development remains unregulated, careless and sensor less then it surely will lead to dangerous effects on the environment. And in case if this development is ongoing without the adequate and proper safeguards and equipment the consequences to it could be really dangerous and far-reaching from the control of the governments. But Alongside these concerns, the increased demands of globalization and industrialization grew the accountability of the industries as well as these are engaged in the potentially very hazardous and toxic activities.

Though Bhopal started a massive influence and change in the government's actions and legislative framework related to the industrial disaster management authorities. Hence numerous laws were amended and passed as the action in aftermaths of the tragedy. The committed judiciary started taking a very active start and role towards environmental protection. So working on these concerns and exactly a year later the Bhopal gas tragic accident on the fourth and sixth December of 1985 the Indian judiciary declared the Doctrine of Absolute Responsibility decision in a serious court case involving the oleum gas leakage from the Cloths Mill factories of Delhi owned by brand called Shriram Foods. This was also implemented for the industries dealing in production of Fertilizer in Delhi.

Considering the information provided by the India's National Disaster Management Authorities (NDMA), around one hundred and thirty chemical emission accidents had been registered around the whole country and being reported in that decade to the year October 2013, which caused two fifty nine premature deaths and around five sixty three serious injuries and serious health impacted victims. Unfortunately even after the 1984, many industrial accidents have been registered and the concerning this is not even getting dimmer as even last year and this year gas leakage in factory of Visakhapatnam, Andhra Pradesh and in Assam these severities have been reported, The list includes previous case of leakage of chlorine gas at a factory of Jamshedpur in 2008, a hazardous fire outbreak at the petrol pump of Oils and Natural Gas Corporations (ONGC) located at Bombay High in 2005, and a severe leakage of chlorine gas in a factory of Vadodara in 2002 that somehow affected more than two hundred and fifty people in that area [6].

These cases are not limited to some accidents; sometimes these were so severe that the impact was more like some disaster and even natural disasters can cause such tragedies. A chemical accident happened because of a natural disaster at oswal chemical and three fertilizers ltd. in Pradeep of Odisha in year 1999 large volume of ammonia gas was start leaking during the crossing of a super-cyclone in the state. Another reported tragedy because of an earthquake in Bhuj of Gujarat occurred in 2001 that damaged the complete sludge of phosphoric acid. The National Green Tribunals (NGT) convicted the members of Pollution Control Boards (GPCB) and the popular cement manufacturing company called as Ambuja Cements Limited for a case that involved and claimed illegals release of toxic gases in atmosphere that damaged the agricultural fields of Gujarat. While the GPCG punished with a fine of one lakh rupees, and the company made to give a fine of five lakh rupees [8].

3. Data Analysis:

3.1. The legal proceeding of the Bhopal gas in the aftermaths of the tragedy?

After the accident a very long unending justice journey for the suffered victims of the tragedy is carried along with the years. The question was majorly oriented around two questions first was the quantification and responsibility of the liability and employers of the corresponding corporation that handled the hazardous waste and dumping of the substances with carelessness, violating the protocols and in absence or not following any well-established security principle. The other concerning question was the impacts of these hazardous elements and waste on the biodiversity and environment. The issues related to the prevention of these effects and such damages to the people or environment which could be possible in the future accidents as for the proper installation of safety equipment and security devices and adoption of right mechanisms [4].

When the tragic gas accident took place in Bhopal, it was well watched by the clustered American lawyers as the pesticide company belongs to the USA. Also the Government of India tried to ensure and tackle each claim about the accident and the facts arising out regarding the gas disaster were dealt with full proper investigation and as well speedily results which were enacted in the processing claims of Bhopal Gas Leak Disaster Act, passed in 1985. This Act provides an exclusive right to the Indian Government for acting as a prior leader, to represent the case and all the claimants. In both courtrooms of within India and outside India as well. The legal battle of Indian government with the corporate giants proceeded further here in India after the USA. The District Court of Bhopal, MP granted an amount of three hundred fifty crores as an interim payment. But later in a filed appeal against this judgment, the amount was reduced by 30%, but against this decision the Union of India again appealed in the Supreme Court of India. Then a five judge bench of Supreme Court proceeded to the hearings of the case and on 14th of February in 1989 the Supreme bench of judges ordered a final settlement of all the claims made and that arose because of the accident. In the judgment UCC was fined and made to pay an amount of four hundred and seventy million dollars to the Indian Government [9].

3.2. What major changes India saw as a learning after the tragic accident of Bhopal?

After Bhopal a big change has been seen in the case of gas leakage in the oleum case that occurred in the 1987. That time the Indian Factories Act, of 1948 has been amended so that to minimize victims of accidental risk from such chemical industries and to extend the scope of people in the safe side of the law protection. This scope previously was very narrowly defined that only covers the industry workers and also the starting premises of industry was increased to the extent of the general public as well in the vicinity sector of the industry. These modifications also amended for the appraisals when the chemical or hazardous elements industries were being established or being expanded [9].

RESULTS & DISCUSSIONS

This research paper has explored almost every aspect related to the pesticide factory and the gas tragedy due to which thousands lost their life without mistake. The paper has highlighted how the emission of their harmful gases destroyed not only the lives of victims but also the environment. How the irresponsible dumping of chemicals in the water sources and atmosphere led to the contamination of the groundwater and so it is still affecting so many people and their lives. People are dying because of the usage of this contaminated water and are still waiting to get a comprehensive solution to solve the problem of water pollution there. Some security moves taken by the government of Indian, including the establishment of the committees and MoEF, the amendments in the Environment protection act and Indian factories act has been discussed. That is how these steps have given coincidence to the residents that these will surely offer help and protection of citizens. The public health would be considered as priority over any industry or harmful business practices maybe by some local or any multinational company (MNC) or chemical industry and even some grassroots organizations which may play a dangerous part in the development [9].

CONCLUSION

The unforgettable gas tragedy of 1984 Bhopal must be considered and actually it should be continuously considered as a warning sign that with the globalization and industrialization in the nation the security of people and environment must be considered along with the development. As ignoring the protocols and environment has resulted in such a big tragedy that is still affecting so many lives and claiming lives too. The protocols must be followed by everyone the owner, manager, people and government which were ignored and heeded once. The consequences of the Bhopal case and its aftermath should be considered as a warning as the path towards industrialization and globalization, for the developing countries like India in particular, is distraught with the people, the environment and the economic threats. Sustainable development should be considered on the priority it is applied to developing or developing both the countries. As the Indian economy and development is growing with a tremendous rate but along with it the industrialization, deforestation, and urbanization collaboratively polluting the nation and because of these reasons the subcontinent continues to get polluted. Far more steps in the context of chemicals and environment remain to be carried out for the public health and the environment in the main context of development, industrialization and globalization taking the case of Bhopal 1984 tragedy as an experience. This paper can help and refer to the people who want to learn more about the tragedy and want to research the water contamination in Bhopal.

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