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A Review on the Bhopal Gas Tragedy

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ABSTRACT:On the freezing night of December 2-3, 1984, when 41 tons of MIC gas was released from the Union Carbide plant in Bhopal, we, the then Mayor and Chief of Police of Bhopal, were the two people to whom the burden of managing the world's worst industrial tragedy fell unceremoniously. It was probably the most difficult challenge faced by a duo in peacetime, with the company initially in denial mode about the release and then calling it a 'tear-gas' sort and having no antidote information, and with the restricted means of evacuation, medical emergency handling involving hundreds of thousands, identification and disposal of the thousands of dead.Everyone was very helpful to the local people, the medical community, the railway workers, the NGOs. We explain the incident and the management of the consequences and the spot decisions that had to be taken in the expectation that no event like this will happen anywhere.

KEYWORDS:Bhopal gas tragedy; Handling of emergency; Union carbide response; Methyl isocyanate; MIC.

INTRODUCTION

Progress in science and technology has increased our quality of life as society has progressed and civilizations have advanced. The creation of many countries, including India, has been tedious and meticulous. When a tragedy occurs, growth is always lost, causing loss of life, property and livelihood, contributing to economic and social stresses. Disasters can occur at anytime and anywhere, whether natural or man-made, but the Bhopal Gas Tragedy remains an unprecedented catastrophe[1]. It is, to this day, the worst industrial tragedy in human history.In line with their duties of the day, the writers of this paper were actively interested in handling the Bhopal Gas Tragedy. The Mayor of Bhopal was Dr. Bisarya and the Chief of the Bhopal Police was Mr. SwarajPuri. At the spur of the moment, the writers had to take several leadership decisions and related acts, bringing their own lives in grave danger.The authors look at this tragedy narrowly under the following heads, with their personal experience in perspective:

1. What has occurred?
2. Human interactions
3. Lessons gained
4. For the Future
5. Results

What Occurred

What actually happened on that fateful night is a mystery and is a subject of discussion for many. But the agreed truth is that an estimated 41 tons of deadly methyl isocynate (MIC) gas leaked out of tank No. 610C of the Union Carbide plant and escaped into the atmosphere in the early hours of December 3, 1984[2]. Owing to an exothermic reaction triggered by water in the tank, the immediate cause was the building up of pressure in the tank. This pressure caused a rupture of the safety valve and the gas to escape. Such gas leakage into the atmosphere was a contingency that should have been planned for by the factory.This tragedy

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occurred because either the critical security systems failed or were inoperable or the safety protocols were not strictly adhered to.In 1968, the Union Carbide plant was set up[3]. In 1979, the production of 'Carbaryl', a pesticide, began. MIC was an intermediate compound that was appropriate for the development of Carbaryl. However, for the storage of MIC, the plant had no long-term authorization. The unit's safety record suffered because of:

1. December 1981, killed by a worker while handling

Gene. Phosgene.

2. February 1982-Following 25 staff hospitalized

Pipe leaks that contain ammonia, MIC and hydrochloric acid

Uh, acid.

3. December 1982-a major chlorine leak that affects 16

Employees. Jaiprakash Nagar's neighboring shanties

Influenced.

In the Legislative Assembly of the State, the question of the threat to Bhopal from this pesticide plant was raised[4]. The problem was investigated by an accident inquiry committee and it was concluded that the plant was healthy and that there was no risk to Bhopal, nor would there ever be!Mr. J. Mukund, Works Manager of Union Carbide, displayed a very chilling overconfidence. He is believed to have said that, since the plant was shut down, the gas could not have leaked from his plant. Once the leak was reported, the Medical Officer of the Company was of the opinion that the gas was not lethal but rather a mild irritant. And yet the people on the streets of Bhopal were choking to death!

Personal Experiences of the Government officers

Mr. SwarajPuri:

At the time of the Bhopal Gas Tragedy, I was posted as Superintendent of Police, that is, the Police Chief of the District of Bhopal. I returned home on December 2/3, 1984, about mid-night. It was about 12.15 a.m. That I have obtained theAlert from the Police Control Room that the Union Carbide plant was leaking some gas. I presumed that there was some leakage from this factory, similar to what had happened earlier. I was moving toward the UnionPlant carbide. I realized that the condition was much worse than I had anticipated as I moved through adjacent areas such as KaichiChola and Jay Prakash Nagar[5].There was a coughing feeling in my mouth, and my eyes were burning. In a panic, I could see people running about. In order to track the situation, I returned to the Police Control Room. I put the doctors, hospitals, and senior officials of the administration, the Fire Brigade, and the Home Minister on notice. My physical health began to deteriorate, but my reason and conscience were telling me not to panic at the same time. By now, it was very clear that a significant volume of poisonous gas was constantly pouring out of the Union Carbide plant.

About 1.30 a.m. I began to vomit. Like a column from the earth towards the sky, I could see beyond the green-yellow-greyish cloud of gas. Suddenly, the thought of my two small children and my wife flashed into my mind. To my utter consternation, I discovered that the

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phone at my residence was still dead. That is where my immediate attempts to search for my family ended and I continued to deal with the more important task at my side, the task of providing the affected people of Bhopal with relief, warmth, treatment and solace.This was the most complicated and frustrating situation of my entire career as a police officer. I could see the crumbling of rationality and logic before fear and vulnerability.I tried to arrange resources and services for the entire night, to improve people's morale and to minimize the loss of life. I was mentally drained, medically in a poor state, emotionally disturbed, but my sense of duty plodded me on so that my team was not demoralized. The city of Bhopal seemed to have transformed into a 'Poisoned City' early in the morning of 3 December, with human beings and animals either lying dead or seeking medical relief. The whole city was stunned with silence and misery.The key challenge for us in the administration seemed to be to arrange medical relief, provide help, and handle the legal and other formalities as efficiently and amicably as possible. Under the conditions, a monumental assignment,It seemed like the number of dead bodies was infinite. My emotional resolve kept me going and motivated me to save human lives. Those crises have persisted. During this time, as a police officer, I had to arrest Union Carbide Chief Warren Anderson.

Operation Faith

The recycling of the left over MIC at the Union Carbide Plant was involved. Following consultations with national and internationally renowned scientists and experts, it was determined that the best path would be to transform this MIC into a pesticide formed by Union Carbide. This procedure was codenamed 'Operation Faith' and began on the morning of December 16th, 1984[6]. During this process, the most remarkable yet troubling aspect was the fact that our state's Chief Political Executive (Chief Minister) chose to remain inside the Carbide plant until the entire Carbide plant completed Method. It was politics for some, but it was a confidence-building initiative for most people. For us, it was a cause of concern for the Chief Minister's safety.

Drawbacks

Our utter lack of preparedness and ignorance as to how to deal with such a situation was one of the first things that hit us when the gas leak took place. The immediate medical brotherhood appeared to be ignorant of the effects of the gas on humans and the treatment as well. Sodium thiosulphate was administered as a possible antidote, since the experts found the leaking gas to be from the cyanide family[7]. Any other variables that seemed to lead to this tragedy were:

- Information was not properly accessible on the storage and handling of hazardous and hazardous materials.
- The impact of gas on humans and treatment have not been established.
- There was a lack of cooperation between the leadership of the factory and the emergency services.
- There was a shortage of alert systems for such contingencies and associated mock exercises.
- The 'worst-case scenario' was possibly never expected by Union Carbide.
- The plant maintenance activities appeared to be ineffective and the inventory of essential spares was exhausted.

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- Safety was affected by the exodus of some of the experienced engineers and operational workers from the factory.

Success

Not all was a failure; there was a considerable immediate response from the police and the medical department with whatever meager resources were at their disposal[8]. To aid in the recovery operations, NGOs and social service agencies stepped in immediately. Local media has become incredibly useful, To scotch gossip and to disseminate critical data. The foreign media worked together. The Station Master died from the effects of gas at the Bhopal Railway Station while alerting and controlling the movement of trains, saving hundreds of lives. After all, we could easily conclude that the psychological preparedness of the leaders, cooperation and coordination of their colleagues, material and technical support, involvement of people and incorporation of efforts of all kinds could reduce, if not fully eradicate, the loss of life and property due to man-made disasters.

CONCLUSION

Many years have elapsed since. Our planet has faced numerous catastrophes, such as cyclones, earthquakes and landslides, but in our culture, the memories of Bhopal as a disaster of unknown dimensions continue to endure. Our ability to manage such disasters may have been strengthened by the development of technology and expertise, but we still live in a state of uncertainty as there are no fool proof strategies that have developed to offset similar incidents in the future. It is time to train and raise consciousness among our people. And make sure they know exactly what to do with all disasters and improved preparedness.

REFERENCES

[1] P. Robbins, “Bhopal Gas Tragedy,” in *Encyclopedia of Environment and Society*, 2014.

[2] C. Wankel and J. Weatherston, “Bhopal Disaster,” in *Encyclopedia of Business in Today’s World*, 2012.

[3] A. Mittal, “Retrospection of Bhopal gas tragedy,” *Toxicol. Environ. Chem.*, 2016, doi: 10.1080/02772248.2015.1125903.

[4] R. K. Bisarya and S. Puri, “The Bhopal gas tragedy - A perspective,” in *Journal of Loss Prevention in the Process Industries*, 2005, doi: 10.1016/j.jlp.2005.07.006.

[5] J. K. Gehlawat, “Bhopal disaster - A personal experience,” in *Journal of Loss Prevention in the Process Industries*, 2005, doi: 10.1016/j.jlp.2005.07.002.

[6] J. B. Browning and M. Detroit, “Union Carbide: Disaster at Bhopal,” *Cris. Response Insid. Stories Manag. under Siege. Detroit Visible Ink Press. Febr. 2003; www. bhopal. com/pdfs/browning. pdf)*, 1993.

[7] A. Taylor, “Bhopal : The World ’ s Worst Industrial Disaster , 30 Years Later,” *The Atlantic*, 2014.

[8] D. R. Varma and S. Mulay, “Methyl Isocyanate: The Bhopal Gas,” in *Handbook of Toxicology of Chemical Warfare Agents: Second Edition*, 2015.