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# A STUDY ON IMPACT OF BHOPAL GAS TRAGEDY AND ITS CONSEQUENCES ON THE PEOPLE OF BHOPAL

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**Abstract:**

The study is Bhopal gas tragedy is worth of the attention that has happen on December 3, 1984 ,in the Bhopal (Madhya Pradesh ) , India . This is consider as one of the worst industrial disaster in the world . Due to the negligence by the management caused of the leakage of the 41 tons of methyl isocyanate gas from the Union Carbide plant . It not only created huge loss to the human being life but also effected entire surrounding . This the worst industrial tragedy in India .

**Introduction:**

In 1989, Union Carbide India Limited (UCIL) agreed to a $470 million (£257 million) settlement with the Indian government following a lengthy legal battle. Two years later, in 1991, the Supreme Court of India permitted the enactment of the Bhopal Gas Leak Disaster Act, granting the government control over Union Carbide Corporation (UCC), the plant site, and around $270 million to establish the Bhopal Memorial Hospital and Research Centre, a 500-bed facility dedicated to treating those affected by the gas leak and researching its effects.The immediate death toll was officially reported as 2,800, mostly occurring in the first few days. This figure was later revised upward, with long-term health effects causing an additional 15,000 deaths by 1985. The impact of the gas leak continues, with an estimated 15,000-20,000 more deaths and over 500,000 injuries, including cases of blindness, cancer, and birth defects. Both the Indian government and local activists contend that these figures are significantly underestimated.Bhopal, located in the central Indian state of Madhya Pradesh, is known as the site of the world's worst industrial disaster. In December 1984, a plant owned by Union Carbide India Limited (UCIL) leaked 40 tons of toxic methyl isocyanate (MIC) gas into the atmosphere. Initially, the company denied the incident.

  

The Indian Council of Medical Research (ICMR) reported that at least 520,000 people were exposed to the gas, with 150,000 to 600,000 suffering from moderate to severe exposure and experiencing "temporary or permanent disabling effects." On the morning of December 3, a silent and toxic cloud of methyl isocyanate (MIC) and other chemicals settled over the city of Bhopal, which now has a population of nearly one million. Unaware of the danger, residents continued their daily routines, waking up to a silent, invisible catastrophe.Sources differ on the total number of deaths. The immediate death toll was estimated at 2,000, with around 8,000 dying within the following two weeks, most of them slum-dwellers. The government of Madhya Pradesh confirmed 3,787 deaths related to the gas release, but a more realistic figure suggests over 8,000 deaths within two weeks and an estimated 15,000 to 20,000 cumulative deaths due to the gas leak.The Bhopal gas tragedy, the world's worst industrial disaster, occurred on the night of December 2-3, 1984, at the Union Carbide India Limited (UCIL) pesticide plant in Bhopal, Madhya Pradesh, India. A leak of methyl isocyanate gas, mixed with other chemicals such as hydrogen cyanide, spread throughout the region. Many were unprepared for an incident of this scale, as the plant's alarms, which were regularly triggered by minor incidents, had been turned off. Consequently, the surrounding residents, many of whom lived in slums and were either illiterate or unfamiliar with the plant, were unaware of the proper safety procedures and did not realize the danger until it was too late.

**Literature review :**

1) **S .Sriramachari (2004):**The Bhopal gas tragedy environment disaster“current science 2004”-- this is an impact of environment working condition and is the create of history in humans or workers life, and people was dead with in time, day, month confused to rise effect on life and environment because chemical leakage in industry.
2) **J P Gupta (2002):**The Bhopal gas tragedy could it all happened in a developed country .The study on impact of developed country and some after days to take a clear judgement of safety measuring rules and training chemical process industry to take a more action for safety purpose. And this is knows about effects of Hiroshima and Nagasaki war realizes atom bombs causes and some time develop the nation.
3) **Arpit Bhargava , Neelam Pathak (2010) :**Status pf inflammatory biomarkers in the population that survived the Bhopal gas tragedy this is an impact of human health and surrounding environment of nature. December 2 or 3 ,1984 night to release the chemical accede to attack industry. And to study and analyses the Methyi isocyanate, inflammation, and Biomarkers these are key

  

words of Bhopal gas tragedy study research paper.

4) **Gordon C McCord , Prashant Bharadwaj (2023)**: Bhopal gas tragedy a safety case study ,this is one the world record industrial disasters, this is an know about when time to leak the gas and what are the causes affected and Death rates some people to investigate the Bhopal gas tragedy because of more workers, peoples, employees is more and more affects in this industry and shock news of all chemical industry.

**Objectives :**

1) To know the reasons for the disaster
2) To investigate effect on the health of Bhopal people.
3) To know government precaution for this incident.

**Research methodology :**

The case study is completely based on the secondary data, the data is collected from the publication , journal , books .

Data collection : Secondary data

**Consequences on the people of Bhopal :**

Chemical Leak the catastrophe was triggered by the release of methyl isocyanate (MIC), a toxic gas, from the Union Carbide India Limited (UCIL) pesticide plant. The leak originated from a storage tank, caused by a combination of poor maintenance, insufficient safety measures, and equipment failure.Safety Negligence the plant had numerous safety deficiencies, such as inadequate safety systems, lack of proper worker training, and poor equipment maintenance. Essential safety mechanisms, including gas scrubbers and vent gas scrubbers, were not functioning correctly, which could have mitigated the impact of the gas leak.Lack of emergency preparedness the plant was ill-prepared to manage a significant gas leak, lacking emergency response plans, proper evacuation procedures, and effective communication systems. Local authorities were not equipped to handle such a disaster, resulting in delayed response and rescue operations.Regulatory failures there were multiple regulatory lapses, as the plant was not regularly inspected and safety regulations were poorly enforced. Additionally, there was a lack of coordination between the company, local authorities, and government agencies responsible for overseeing industrial safety.Corporate negligenceUnion Carbide Corporation (UCC), the parent company of UCIL, faced criticism for its role in the disaster. Allegations suggest that cost-cutting measures and a focus on maximizing profits led to compromises in safety standards and insufficient investment in maintenance and safety protocols.

Acute effects the immediate aftermath of gas exposure included respiratory distress, eye irritation, coughing, and choking. Many people suffered severe lung damage, leading to

  

respiratory failure and death. Additionally, some individuals experienced burns and injuries while attempting to escape the gas cloud.Chronic effects the survivors of the gas leak faced long-term health problems, including chronic respiratory issues such as asthma, bronchitis, and pulmonary fibrosis. The toxic exposure also caused damage to the eyes, liver, kidneys, and nervous system. Some survivors developed neurological disorders, reproductive issues, and an increased risk of cancer.Birth Defects the gas leak significantly affected the next generation, with children born to exposed parents having a higher risk of birth defects, developmental delays, and growth abnormalities. The toxic effects of the gas were passed on to unborn children, resulting in long-term health challenges.Psychological impact the disaster had a deep psychological impact on survivors, many of whom experienced post-traumatic stress disorder (PTSD), anxiety, depression, and other mental health issues. The loss of loved ones, physical injuries, and ongoing health problems contributed to the psychological trauma of the affected population.Environmental contamination the gas leak also led to environmental contamination, affecting soil and water sources in the surrounding areas. This contamination further harmed the health of the local population, as they were exposed to polluted water and food sources.

Stricter Industrial Safety Regulations the government implemented more stringent safety regulations and standards for industrial operations, especially those dealing with hazardous chemicals. This involved more rigorous inspection protocols and mandatory safety audits for factories.Establishment of the Ministry of Environment and Forests in 1985, the Ministry of Environment and Forests was created to oversee and enforce environmental laws and regulations, including industrial safety standards.The Environment (Protection) Act, 1986 this comprehensive legislation was enacted to provide a framework for environmental protection and improvement. It granted the central government authority to regulate and control industrial pollution and manage hazardous substances.The Public Liability Insurance Act, 1991 this act required industries handling hazardous substances to obtain insurance to provide immediate relief to victims in the event of an industrial accident.The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996 these rules established a framework for creating and implementing emergency response plans. They required industries to develop on-site emergency plans and coordinate with local authorities for off-site emergency plans.Improved Emergency Response Systems the government enhanced emergency response systems by developing disaster management plans and conducting training programs for local authorities and emergency responders.Creation of the National Disaster Management Authority (NDMA) the NDMA was established to coordinate disaster

  

response and management at the national level, ensuring a more organized and effective response to industrial and other disasters.Increased public awareness and training efforts were made to raise public awareness about industrial hazards and emergency procedures. Training programs were conducted for workers and communities living near industrial plants to better prepare them for potential accidents.

**Finding :**

1)The government , management , worker , surrounding people should be aware of the industry around there locality the things they are manufacturing , the effect on their health .

2)Even now also the people are suffering from the malnutrition in the children.

3)The government introduced the "Environmental Protection Act in the year 1986" , for the protection and improvement of the environment , "Public Liability Insurance in the year 1991" for the purpose of immediate relief for the effected person .

**Suggestion:**

1) Health monitoring for the victim for addressing chronic problems .
2) Justified compensation for the victim family .
3) Proper disposal method for the waste .

**Conclusion:**

The Bhopal gas tragedy serves as a stark reminder of the catastrophic consequences of industrial negligence and inadequate safety measures. The disaster, which led to thousands of immediate deaths and long-term health issues for hundreds of thousands, exposed significant failures in safety protocols, emergency preparedness, and regulatory oversight. In response, the Indian government implemented major reforms, including stricter safety regulations, enhanced emergency response systems, and increased corporate accountability to prevent future incidents. Despite these efforts, the legacy of Bhopal persists, highlighting the ongoing need for vigilance, robust safety standards, and a commitment to protecting human lives and the environment from industrial hazards. The tragedy not only reshaped industrial safety laws in India but also provided a global lesson on the importance of stringent safety measures and corporate responsibility in industrial operations.

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