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Analysis of Styrene Gas Leak Effect on Humans and Applicability of Law

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ABSTRACT

A very unfortunate and disastrous event took place at the LG Polymers facility located near Vishakhapatnam in Andhra Pradesh, India which was informed by the locals to the police at 3:30 AM. Shortly Ambulances, Fire Brigades and Policemen arrived at the spot to rescue the people living in the vicinity of the Facility. The hazardous "Styrene" gas leak spread rapidly in radii of 3 Kilometers within minutes. A lot of litigation will be involved for providing right, fair and adequate compensation to the victims of this Gas Leak. Years after the Bhopal Gas Tragedy still several people are devoid of adequate compensation as per the ends of Law and biological anomalies continue to haunt the people of Bhopal. Irrespective of the several such hazardous gas leaks have occurred in the past noteworthy is the Oleum Gas Leak. The tremors of the past can still be felt when the residents around that area remember the incident. The analysis shows that styrene gas leak causes may health effect on human as well as animal and causing at least 350 people were significant morbidity and 11 deaths.

Keywords: Styrene gas, Monomer, Cancer, Chemosis, Depression

INTRODUCTION

On Thursday, 7th May, 2020 the gas was leaked from South Korean electronics manufacturer LG's styrene plant in Vizag, Andhra Pradesh, India which was informed by the locals to the police at 3:30 AM. The hazardous "Styrene" gas leak spread rapidly in radii of 3-5 Kilometers within minutes [1,2]. In the morning Prime Minister Narendra Modi & their team taken a High-Level Meeting to discuss and take quick action on this issue. When the news hit the news channels, at least 11 people and including a child had lost their lives and at least 350 people were found battling for their lives at Vishakhapatnam's King George Hospital.

Police has successfully evacuated people in the vicinity of 3-5 kilometers of the plant as part of precautionary measure. Many residents of surrounding villages- BC Colony, RRV Puram, Padmapuram, Kamparapaelem and Venkatapura were found unconscious on the roads, since the Gas Leak took place in the middle of the night, people in the vicinity started feeling uneasy and complained about difficulty in breathing [2]. The situation turned worrisome due to the outbreak of Covid-19 and lockdown so announced. The Government of Andhra Pradesh further announced relief to the victims and an aide was further announced by the Central Government. Chief Minister YS Jagan Mohan Reddy appealed to people not to panic as the State government will always stand by them. He said for the first time Rs 1crore was paid to 12 families, whose members had died in the gas leak [3-7].

Investigation

"Styrene is a monomer which is in a liquid state and is safe below a temperature of 20 degrees Celsius. But, because of the malfunctioning of the refrigeration unit, the chemical started vaporizing" said District Collector V. Vinay Chand.

At least 11 people and including a child had lost their lives and at least 350 people were found battling for their lives at Vishakhapatnam's King George Hospital [2]. The police reported and released the name of the victims who lost their lives in this hazardous styrene gas leak. The dead bodies have been identified as Appala Narasamma [Age-45], C. Ganga Raju [Age-48], B Narayanamma [Age-35], N. Greeshma [Age-9], Meka Krishna Murthy [Age-72], A. Chandramouli [Age-19], P. Varalakshmi [Age-38], N Nani [Age-40], P SanakaraRao [Age-40] and V Nookaraju [Age-60] of RR Venkatapuram village. Including a child has lost their live KundanaSreya [Age-06] [1]. As per the animal husbandry department in vishakhapatnam gas leak kills 32 animals & 199 treated.

P-tertiary butyl catechol or PTBC is currently being used in Visakhapatnam to neutralize the effect of the styrene gas leak. This chemical manufactured only in Vapi. The Andhra Pradesh government requested Gujrat CM to airlifting the chemical, then 500kg of this chemical airlifted to Andhra Pradesh.

EFFECT ON HUMANS

As per the US-based Environment Protection Agency [EPA], short-term exposure of the styrene gas to the substance can result in respiratory problems, irritation in the eyes, irritation in the mucous membrane, and gastrointestinal issues. And long-term exposure could drastically affect the central nervous system and lead to other related problems like peripheral neuropathy. It could also lead to cancer and depression in some cases. However, EPA notes that there is no sufficient evidence despite several epidemiology studies indicating there may be an association between styrene exposure and an increased risk of leukemia and lymphoma. Symptoms include headache, hearing loss, fatigue, weakness, difficulty in breathing etc. Animal studies, according to the EPA, have reported effects on the CNS, liver, kidney, and eye and nasal irritation from inhalation exposure to styrene (Tables 1 & 2).

Table 1: Acute effect of styrene on humans

Ocular	Chemosis, redness, watering, ulcers, photophobia
Respiratory	Distress, pulmonary edema, pneumonitis, pneumothorax.
Gastrointestinal	Persistent diarrhea, anorexia, persistent abdominal pain.
Genetic	Increased chromosomal abnormalities.
Psychological	Neuroses, anxiety states, adjustment reactions.
Neurobehavioral	Impaired audio and visual memory, impaired vigilance attention and response time, Impaired reasoning and spatial ability, impaired psychomotor coordination.

Table 2: Chronic Effect of styrene on humans

Ocular	Persistent watering, corneal opacities, chronic conjunctivitis.
Respiratory	Obstructive and restrictive airway disease, decreased lung function.
Reproductive	Increased pregnancy loss, increased infant mortality, decreased placental /fetal weight.
Genetic	Increased chromosomal abnormalities.
Neurobehavioral	Impaired associate learning, motor speed, Precision.

Examination of applicability of law

India follows the highest standard of liability for an incident like this, when a hazardous or dangerous substance used for industrial purposes leaks and causes harm to people. The principle of 'absolute and strict liability' was formulated by the Supreme Court in a crucial judgment in MC Mehta vs Union of India in 1986, when the court was dealing with the leak of oleum gas at the Shriram Foods and Fertilizer Industries plant in Delhi. The opening of this plant had already been challenged in the apex court as being hazardous to the community, and while the main case was being heard, a leak at the plant in December 1985 led to the death of one person and the hospitalization of several others. The interpretation of law is only possible when the brief facts of the case are available, but if in Vizag Gas Tragedy a reference to Bhopal Gas Tragedy is made then in that case the Doctrine of Parens Patriae as held in Union Carbide Corporation v. Union of India [8] can also be considered.

As it was not the first time that such event had taken place in India, prior examples like Bhopal Gas Tragedy [Methyl Iso-Cyanide Gas] and Shri Ram Gas Leak Tragedy [oleum Gas] have set guidelines that define the amount of compensation to be awarded to the victims & their family and how relocation of the plant is necessary if the plant is located in the densely populated area. The case shall proceed on the foundations laid down in the two landmark cases namely, Union Carbide Corporation v. Union of India and M.C. Mehta v. Union of India [9].

In case of a civil matter

If any Non-Governmental Organization[s] or individual[s] working in favor of Human Rights chooses to file a Public Interest Litigation they may file it under Article 226 of the Constitution of India in the Andhra Pradesh High Court or they can choose to file it in Supreme Court under Article 32 of the Constitution of India.

In 1985, the legislature had to pass a law to provide fair compensation to the victims of Bhopal Gas Tragedy named as Bhopal Gas Leak Disaster [Processing of Claim] Act, 1985 So the legislature should be on toes to pass a new law in order to provide just, fair and adequate compensation to the claimants under this act. The claimants can also seek relief through a civil proceeding under the Public Insurance Liability Act, 1991.

In case of a Criminal Matter

The Indian Penal Code, 1860 stands strong to implicate the culprits; a criminal trial can be held based on the following sections. Section 304 [10] and Section 304 A [11] of the Indian Penal Code, 1860. Section 304 is further divided into two parts Section 304 Part - I and Section 304 Part - II. Section 304 Part - I deals with the intention of causing death and Section 304 Part - II deals with knowledge of causing death. In the present case if the charges are framed on the grounds of Section 304 Part - II then this section shall be applicable based on the present facts in hand.

Whereas, for the applicability of Section 304 Part - I, facts need to be drawn through a thorough investigation, to show the sufficient cause of action with regards to the findings behind such intention. Section 304 A is applicable universally based on the facts irrespective of the intention or knowledge because it is safe to assume that there was negligence on behalf of the accused company due to a technical glitch in the refrigerator.

CONCLUSION

Tragedy of Vizag, Andhra Pradesh continues to be a warning sign at once ignored and heeded. Vizag, Andhra Pradesh and its implication were a warning that the path to industrialization, for developing countries in general and India in particular, is faultless with human, environmental and financial stringency. Indian government has served to offer some protection of the public's health from the harmful practices of local and multinational heavy industry. The Indian economy is growing at a tremendous rate but at significant cost in environmental health and public safety as large and small companies throughout the subcontinent continue to pollute. For public health in the context of industrialization to show that the lessons of the countless 11 dead and at least 350 people were found battling for their lives at Vishakhapatnam's King have truly been heeded.

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