Bhopal Gas Leak:
Thirty years of crisis and coping

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In 1984, the Bhopal plant, an unit of Union Carbide India Limited (UCIL) was at the origin of a major industrial disaster. Thirty years later the crisis lingers.

The Bhopal disaster: A multidimensional genesis

Developmental

- Need of pesticides for the Green Revolution (to make India self-reliant in food production).

Industrial

- Poor industrial regulation and inadequate safety standards.
- Use of methyl isocyanate (MIC)--very unstable and toxic--to produce pesticide.

Demographic

- Rapid urbanization, extensive urban sprawl, with slums reaching the plant.
- About 100 000 people living within a radius of 1 km around the plant (Jackson, 1993).

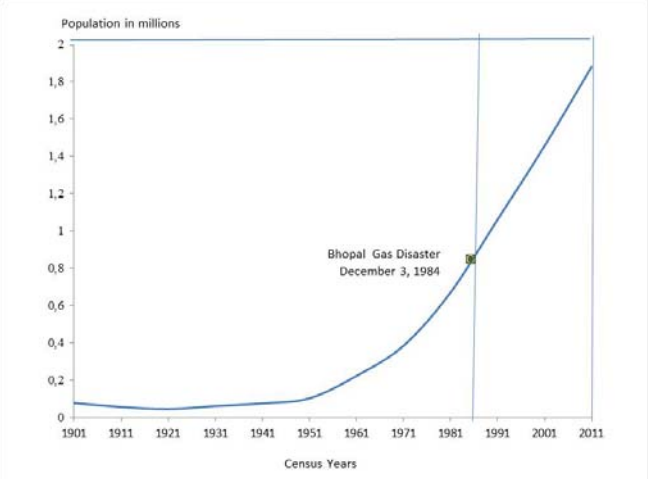

Figure 1. Growth of Bhopal Urban Agglomeration (Source: Census of India)

Economic and financial

- Decline in demand for pesticides leading to excess stock in the premise and bad maintenance of the storage in tanks (oriented towards minimization of costs).

Drift towards Catastrophe

On December 2, around 11 p.m., the pressure in Tank 610 increased and half an hour later caused the leak. The siren blew for second time at 3 a.m.: many people were already dead or severely affected.

Utter panic and confusion

- Leak during the night with most people sleeping.
- Lack of information: what happens? What to do? Is it better to stay or to go? What is the direction of the wind?
- Spread considered to have engulfed an area of 15-20 km around the plant.
- No treatment protocol known to the medical team.

"*So much noise: people coming and going.[…] In the morning we heard it was a big thing.*"

M. S., MP Voluntary Health Association,
15 years at time of disaster,
March 2013

Source: Agarwal A., Narain S. (1985), "The Bhopal Disaster", *The State of India's Environment 1984-85*, p. 211

Human and health consequences

- Deaths due to gas exposure (more common among people homeless and living in slums, with no protective walls and roof in the unit in close proximity to the plant).
- Deaths from accidents related to panic and crowding on road.
- Erratic population movements in search of safe shelters, back and forth movements (about 100 000 persons left the city, some went to the countryside and stayed temporarily).
- No documented bias in death with regard to gender or age
- More or less severe health problems, affecting eyes, lungs, skin, stomach, intestine, etc.
- Spontaneous abortions, stillbirths, increase in peri- and neonatal mortality
- Effects on health of newborns (physical and mental disability)

Table 1. Multiplicity of numbers on causalities

Source and date	Deaths	Severely injured	Affected
Government of Madhya Pradesh	3 783* *First days		
Unicef, 1984	10 000		200 000 80% Muslims 40% children below one year age 20% women in the reproductive age groups 10% elderly women
Supreme Court of India, 1989	4 000* 16 000 *Immediately		
Government of Madhya Pradesh, 1990	3828		
Government of India, (before 2006)	5 295	4 944	
Government of India, 2006		19 000	558 125 *Injuries
Ingrid Eckermann, 2005, 2008	8 000* 8 000** *In the first week **Later	3 900	520 000* 100 000 to 200 000** *Exposed **Permanent injuries
BGPMUS (Victim Campaign Group)	Over 20 000	Over 150 000	
Satinath Sarangi, 2010	2 000* 5 000** *In a few hours *In the next few days		About 500 000
Madhya Pradesh Govrenment 2010	16 000		
India TV, 2013	3 500* 25 000 *Immediately		600000
A local advocate defending the victims, 2013	14 000* 50 000** *“Official number” **“Real number”		

Long term effects: uncertain and non documented

- Lack of understanding and agreement about the possible health consequences for the third generation (malformation of children and other disabilities).
- Loss of numerous members of the cohort of the epidemiological study initiated by the Indian Council of Medical Research (ICMR, Delhi) right after the disaster, limiting thereby seriously the possibility to explore long term effects of gas exposure (indicated in 2013).

The long and never ending struggle for "Justice"

Women hoping for a compensation 28 years after the disaster
Patrika, 03.12.2012

Compensation rules and value of life

. Among the 56 wards of Bhopal in 1984, 36 were declared affected on the basis of a survey by ICMR.

The estimated population of Bhopal Municipal Corporation in 1984 was 894 539 and the population of 36 gas affected wards was 559 835 (Source: http://bgtrrdmp.mp.gov.in/facts.htm).

In 2012, compensation was awarded to 56% of the registered cases after adjudication (455 151 cases for compensation claim rejected); 24% of all death claims got compensation. (Source: GOI, 2012)

Table 2. Cases for compensation registered by the Welfare Commissioners of Madhya Pradesh

Category	Details	No. of registered cases for claim of compensation		
		1st round (during 1985-89)	2nd round (after 1996)	Total
01	Personal Injury Cases	597,908	403,815	1,001,723
02	Loss of Live Stock	612	46	658
03	Loss of Property & Business	4745	156	4,901
04	Death Claims	15,310	6,839	22,149
05	Claims of Corporations and other Institutions	84	1	85
All	TOTAL	618,659	410,856	1,029,516
Source: Shrivastava A., 2011, *Legal India.*				

Table 3. Amount of compensation by category

Category of loss	Amount (in Indian Rs.)
Death	100 000-300 000
Permanent total or partial disability	50 000 -200 000
Injury of utmost severity	Up to 400 000
Claims for minor injuries	Up to 20,000
Loss of personal belongings	Up to 15,000
Loss of livestock	Up to 10,000
GOI, 1992 (Source: Supreme Court of India, http://judis.nic.in).	

*"My sister was pregnant. Her son [born the day after the disaster] was affected. He was continuously vomiting. No medicine was working. After 20 years, it was better"**

M. S., MP Voluntary Health Association,
15 years in 1984,
March 2013

*His son didn't receive compensation because he was born on December 4th of 1984.

"I got some money from government 50 000 Rs. I purchased this auto and some household's things"

M. A., 11 years old at time of disaster,
Owner and driver, Three-wheeler scooter rickshaw,
March 2013

"I was among the six hundred and fifty thousand persons who filed their claims for compensation. Documentation and Medical Examination occurred at Bhopal more than once. A bronchial attack on my lungs and on-set of cataract in both the eyes were noticed as after-effects of the exposure to MIC. Another half a dozen visits to Bhopal took place for the judicial proceedings. The claim was settled during 1997 with a payment of Rs. 35,000/- (about 800 US Dollars). It virtually meant a negative compensation since much more money had been spent by me during this period on medication and frequent travels to Bhopal for documentation and judicial proceedings."

J. K. Gehlawat, "A personal experience", 2005
Transit passenger reaching Bhopal by train
just at the time of gas leakage.

Some legal milestones

-1985: Government of India (GOI) enacts the *Bhopal Gas Leak Disaster Act* that enables the GOI to act as the legal representative of the victims in claims arising of or related to the Bhopal disaster.
- 1989: The Indian Supreme Court upholds the validity of the *Bhopal Gas Leak Disaster Act*.
- 1993: The U.S. Supreme Court declines to hear appeal of lower court, thereby affirming that Bhopal victims may not sue for damages in U.S. courts.
- 2013: U.S. Court of Appeals rules that UCC* is not liable for pollution-related personal injury claims made by residents near the Bhopal plant site in India.
- 2014: Submission of new evidence by plaintiff in southern district court of New York showing critical role of UCC in construction and design of the plant including safety management and waste disposable.

*Union Carbide Corporation is now part of Dow Chemical Company

An Industrial Disaster: persistent pollution, falling memory

Pollution and cleaning

- Controversies regarding pollution of soil and water in and around the plant.
- 2006: Government of India and Government of Madhya Pradesh sanctioned money "for providing safe drinking through pipelines from the Kolar Reservoir to the 14 localities around the UCIL plant site" (GOI, 2009).
- 2012: Supreme Court of India "direct the Union of India and the State of Madhya Pradesh to take immediate steps for disposal of this toxic waste lying in and around the Union Carbide factory […] within six months" (from August 09, 2012).

Slums next to the former plant (2013)

- Project of transfer of toxic waste and incineration in Gujarat abandoned due to opposition of local NGO's (with an argument of no transfer of pollution).
- Risky and costly project of transfer the Bhopal's toxic waste to Germany (contract didn't materialize).
- The Group of Ministers (GoM) set up to guide the clean-up process is yet to come out with definite roadmap.

Memorial dedicated to the victims of the disaster. Bhopal, 2013

"*The plant and the factory premises need to be contaminated and conserved as a modern industrial heritage and a memorial to the disaster in the same manner that Nazi concentration camps in Europe have been conserved."*

Satinath Sarangi, *The Week*, December 19, 2010.

Memory of the disaster

- Demographic oblivion by renewal of the population and expansion of the city (rapid population growth and migration as factors of continuing urbanization).

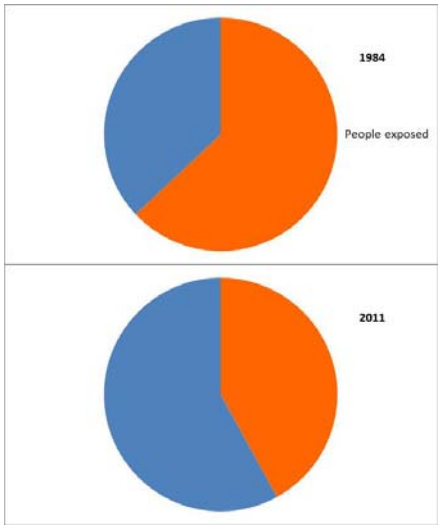

Figure 2. Declining share of population exposed in 1984 in Bhopal U.A.

In urban Bhopal, in 2011, people less than 28 years represent 55% of the population. They have no remembrance. Born after the disaster they have no remembrance of it. Nevertheless a part of them have been affected indirectly.

"*I remember this [disaster] only on 3rd of December*"
K.P., 14 years old at the time of disaster, March 2013

"*Public have largely forgotten the event, except victims. It became one day event. No official celebration. Just organized by civil society and victims*. […] *Political leaders have shifted*"

Harish Malik, Resident Editor Patrika, Bhopal, March 2013.

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