

The Bhopal gas disaster: focus on community health and environmental effects

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George Thomas's editorial (1), responds to the recent 2010 Indian court verdict on the Bhopal gas disaster of 1984 (2). The court's action, finding seven officials of Union Carbide (India) guilty, does not resolve many of the long-standing grievances against international corporations and their officers, nor the multiple medical and legal complications still faced by the victims of the Bhopal gas disaster.

Thomas rightly identifies the serious failings, and the need for improvement, in the state of occupational safety and health in India. He focuses on the ramifications in a variety of workplaces where inadequate or unenforced legal and health protections lead to worker ill health, injury, and even death. The medical and legal professions, workers' unions, and government departments responsible for workplace safety all need to do more to protect workers. They must build on regulations already in place, exercising vigilance to see that these are enforced. They must not only conduct oversight of traditional factory workplaces, mines, and so forth, but also ensure that regulations appropriate to new types of workplaces, like those producing electronic components for a wide range of devices and technologies, are promulgated in a timely way. Had proper safety standards been in place, we would probably never have had the Bhopal disaster.

On the night of December 2-3, 1984, the gas, methyl isocyanate (MIC), along with 24-26 other toxic chemicals, totalling 42 tonnes (3), leaked from the Bhopal Union Carbide plant into the city, especially into nearby working class homes. Identified as the world's largest industrial disaster, the tragedy remains a topic of medical, scientific, and legal research, articles, and debates. Human rights proponents, health activists, journalists, novelists, documentary and popular filmmakers revisit the event regularly. In Bhopal, the local community has organisations dedicated to the welfare and health of the victims. An annual rally is held in Bhopal to commemorate the date, often with the burning of the effigy of Warren Anderson, then the CEO of Union Carbide (now merged with the Dow Chemical Company). Anderson was arrested in Bhopal in 1984, but then released, and never returned to face charges. Now aged 89, he has been considered a fugitive; an arrest warrant was issued for him by a New Delhi court in 2009 (4). Websites dedicated to the Bhopal tragedy delineate the history of the event, and update medical findings and court rulings*. Earlier this year, a meeting was held in Bhopal to inaugurate a project whose goal is to establish the city as a heritage site, not one showing its architectural or artistic heritage, but rather its history of conflict and trauma (5). "The abandoned Union

Carbide factory...is a repository of history and stories that need to be told. Its relevance concerns questions of power, justice 'and sustainability -- social and ecological.'" (5) Around the world, every December 3, remembrances mark this industrial accident. In one scientific meeting, the Bhopal tragedy was described as an event like "Pompeii suddenly engulfed in the dust of Vesuvius, or Hiroshima when the atom bomb was dropped." (6:905)

Why does Bhopal remain a centre of Indian and world attention, even 26 years after the event? I would argue it is because the Bhopal disaster had its greatest effect on the local community, upon its residents, and the environment. It is a community environmental disaster, one not confined to a space, such as a factory, or to one group of people, such as the factory workers. At the time of the leak, the aging and poorly maintained factory was closed, with few workers on site. If this industrial accident had been confined within the factory walls, affecting only its workers, the stratagems for medical, legal, and compensatory mechanisms would have had a clearer and narrower focus, dealing with the medical needs and legal rights of the workers. We would probably not witness the constant turmoil in the press, in the courts, and in the Bhopal community, common today.

However, the insidious nature of the gas leak, spreading late at night through the air into poorly constructed homes, to people sleeping and working outside, led to a situation in which people had little or no chance to flee, to cover their faces, or to take any action that may have saved more lives and prevented the ongoing diseases and injuries people still cope with today. It is estimated that over 3,000 people died immediately; many have died in the years since then; thousands suffer ongoing problems of respiratory disease, eye disease, central nervous system disease, miscarriage, and birth defects. The disaster was widespread geographically; the health after-effects were manifold; the community members affected were diversified by age, gender, and previous health status. Therefore, disputes over the gas leak's effects continue. It is estimated that over 500,000 people were affected by the leak (7).

In the United States, on the regulatory side, one immediate aftermath of the Bhopal gas leak was action taken under the leadership of the US Congressman Henry Waxman of California, chairman of the House Energy and Commerce Committee, a position he still holds today. As the events in Bhopal were unfolding, it was realised that Union Carbide had a plant in Institute, West Virginia, that also produced MIC. (The Institute plant, taken over by a German company, Bayer CropScience,

stopped MIC production in January 2011. This action ended production of MIC in the United States.) (8) Concern was expressed that a Bhopal-like incident could take place in Institute, or elsewhere in the US. Waxman's committee took action which led to the passing of legislation in 1986, known today as the Emergency Planning and Community Right to Know Act. The provisions of this bill include the following requirements: 1) industries must produce an annual report on hazardous toxics and chemicals emitted into the air; 2) industries must make available to fire departments, emergency responders, and local government offices, a list of chemicals they produce; 3) federal, state, and local agencies must have emergency response plans in place to handle accidental chemical and toxic emissions; and 4) industries are obliged to report immediately to authorities if their facility has an accidental emission (9). The 50 US states must enforce this law; they may, if they choose, create additional and more stringent requirements than the federal law.

In 1994, I attended an action-packed environmental health conference in Kolkata. This meeting was held immediately after the epidemic in Surat, which had been identified as an outbreak of plague. At the same time, a large international group known as the International Medical Commission on Bhopal (IMCB) was undertaking investigations in Bhopal. Physicians and scientists with firsthand knowledge of the events in Bhopal presented papers to an engaged audience, hearing the first medical information on the Bhopal victims. One of these papers (10) presented an overview of the IMCB findings. Notably, a representative of the Indian Council of Medical Research (ICMR), when asked to comment on the findings of the IMCB, quietly replied that the ICMR was not allowing release of the findings on the Bhopal victims. This incident reinforces Thomas's comment on the level of secrecy surrounding the government's investigations in Bhopal.

At this conference, I presented a paper on chromium waste sites in Hudson County, New Jersey; one of them, at that time, was the second largest chromium waste site in the world (11). (The site has since been remediated, but remains vacant.) As in Bhopal, residents near chromium waste sites face uncertainties about their health. My ending statement on chromium has applicability for Bhopal and many other communities affected by contaminated sites over which they have little control:

In the chromium story, as in other environmental histories, unchecked industrial activity left the community a troublesome legacy... This environmental story...argues for a community voice in determining the nature of industrial development. By having meaningful input at the outset, communities will be able to ensure their future health and

safety. Until such a process is commonplace...community vigilance and activism are essential to maintaining community environmental health. (11:209)

References

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Endnote

*. It is not possible to list all resources available for those who wish to learn about the multiple venues concerned with Bhopal. Here, a few are provided. For information on Bhopal tragedy, see [www.http://Bhopal.net](http://Bhopal.net) for information on Sambhavna Clinic providing medical for Bhopal victims, see [www.http://bhupal.org](http://bhupal.org). Novels on Bhopal include *A breath of fresh air*, by Amulya Malladi and *Animal's people* by Indra Sinha. For a listing of documentaries and films, including the Bollywood film *Bhopal Express* see <http://bhopal.bard.edu/resources/filmresources.shtml>