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**Two Tragedies in Bhopal:  
A Case Example in the Context  
of the  
Global Economy**

Deborah Wood  
Department of Health Behavior and Health Education

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If you have any questions or comments about the *Carolina Papers*, please contact:

Dr. Niklaus Steiner  
University Center for International Studies  
223 East Franklin Street, CB # 5145, UNC-CH  
Chapel Hill, NC 27599-5145  
(919) 962-6855 or [nsteiner@unc.edu](mailto:nsteiner@unc.edu)

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Anthropology 199

## **Introduction**

On the night of Dec 2-3, 1984, Union Carbide Corporation (UCC), a corporation based in the U.S.A., produced one of the worst industrial accidents in history as a result of an accidental gas leak at their pesticide factory in Bhopal, India. Although it has been almost 17 years since the Bhopal tragedy, in which thousands of people died in the immediate aftermath, the victims of the gas leak are still wanting for a more just compensation and are still reeling with chronic ill health effects. The purpose of this paper is to discuss the broad global economy context and the more proximate factors which led to the tragedy. The details of the accident and its aftermath will then be explored, including the health care, litigation process, and social movements that were engendered in the wake of this tragedy. Finally, lessons that can be applied in the future to prevent the tragedy from occurring in the first place, as well as the subsequent injustices will be examined.

## **The Political Economy of Health**

A historical perspective on political, economic, and social forces and their effects on human health is a useful starting place from which to examine the surrounding context of the tragedy in Bhopal. A number of models or theoretical frameworks can be used to gain depth of insight into this and other industrial accidents. For the purpose of this paper, the Political Economy of Health will be considered as one strategic vantage point.

The Political Economy of Health (PEH) is a broad theoretical framework, not a single theory. It is defined as

**a critical, historical, and interdisciplinary perspective which examines the political, economic and social context within which**

**health and illness are defined, treated, and managed. It examines how political, economic, and sociocultural factors interact to determine the unequal distribution of wealth, power, and life chance in society (Minkler, 1995).**

The PEH considers historical influences on perceptions of health and illness, with special consideration of the dynamic economic forces and class tensions in the larger society as these impact health status. In addition to identifying the shifts of power, it seeks to identify the actors and interests in society who win and who lose as a result of such shifts. It places an emphasis on understanding the importance of class relationships in shaping the life chances of groups and analyzing class to understand racial and gender divisions within a population. Power and class interests can determine what gets defined or not defined as a health or social problem and how we treat or do not treat these problems on a broad societal level.

The PEH offers a model from which to explicate the various determinants of health and incorporates broad societal factors which influence health. Although examples in the literature have not been found for exploring global forces on a particular society using the PEH as such, Gershman and Irwin (2000) use the various constructs of the model to examine the global economy. They discuss poverty, inequality, and patterns of economic change on health policy and health outcomes. Therefore, it seems that the use of the PEH can be legitimately applied to this analysis of Bhopal's tragedy. Another potential weakness in the use of the model in examining the Bhopal tragedy is that despite its strengths in addressing broad societal factors which influence health, its extreme emphasis on social structure does not account for the capacity of people to

respond in varying ways to the structural constraints of their environment. However, it has also been argued that for social science professionals who are well-grounded in both macro and micro level approaches to understanding and addressing societal problems, the PEH actually helps to connect the individual and societal level issues (Minkler, 1995).

### **Economic Growth, Politics, and Poverty**

Gershman and Irwin (2000) state that while economic growth is not unrelated to issues of poverty, economic growth must follow particular patterns in order to benefit the poor. They purport that political structures and an awareness of history to grasp a sense of the ideologies of growth are critical to understanding economic growth and poverty.

Conventional wisdom asserts that economic growth, globalization, and modernization are necessary to effectively combat poverty. Poverty is the primary cause of many health problems and death. However, despite decades of efforts to prompt economic growth, poverty and inequality are actually worsening in many parts of the world. In part, this is due to economic and political structures' authority to distribute wealth and power. For example, political decisions to pay foreign debts or invest in military expansion as opposed to local health clinics would divert financial benefits away from the poor (Gershman and Irwin, 2000).

After World War II until the mid-1970's, there was a period of rapid expansion of the world economy, named the "Golden Age." During this time, wealth increased for many citizens of industrial and industrializing nations. The International Monetary Fund (IMF), the World Bank, and the General Agreement on Tariffs and Trade (GATT), were established during this Golden Age. Their common purpose was to shape a global economy which promoted international free trade and restricted capital mobility in such a

way as to nurture growth in the developing countries but maintain dominance of the capitalist powers. The trade-offs for such high rates of economic growth in developing nations such as India and others were mounting external debt, increasing internalization of international corporations, and strong State intervention in the economy.

### ***Transnational Corporations***

Toward the end of the 20<sup>th</sup> century, global corporations emerged as a major agent of environmental and human health destruction. The economic power of transnational corporations (TNCs) and their effective control of scientific knowledge and technologies enabled them to introduce hazardous materials and production processes into unsuspecting developing countries without the strict regulatory hurdles to cross which they would most assuredly encounter in their home countries. Further incentive was provided to TNCs by the fact that the export of their hazardous activities in developing nations is cheap and produces no environmental consequences that concerned them.

### ***Developing Nations***

Certain societies, especially those possessing the social, political, and economic characteristics of industrializing countries such as in India, are particularly vulnerable to not only the *routine* destruction, but also to industrial accidents. Lacking the proper infrastructure and enforcement of safety regulations, these countries endure more catastrophic consequences when an accident occurs than in industrialized nations. Souza Porto and Freitas (1996) describe socio-political amplification of risk experienced by industrializing nations, defining it as the “comparative powerlessness of certain societies to control risks.”

### *India's Case*

Within India itself, the quest for rapid economic growth and a well-established place in the global market in the 1960's to 1980's produced an industrial model that was spurred on by weak democratic political systems and necessitated changes in the structure and organization of society. The lack of strong organization bred disorganized industrialization and unbridled rural to urban migration of people looking for jobs; however the demand for jobs was far greater than their availability. Furthermore, the urban infrastructure was insufficient to adequately support the population influx in urban areas. Therefore, many had to settle in such undesirable and sub-standard areas as just adjacent to chemical plants (Souza Porto & Freitas, 1996).

Often times, the state and the elite in the society, with their nationalist ideologies supporting progress and development, have demonstrated a lack of concern for protecting the environment or the health of workers in hazardous industries. In the context of the global system, the capitalist class controls the State in India and they both share many values with TNCs, such as the promotion of the Green Revolution in India and the opposition against the working class people, who have often been the poorest and without political power. Moreover, the off-site emergency preparedness plans weren't enforced by laws and medical facilities were inadequate, as was the case in the Bhopal tragedy (Souza Porto & Freitas, 1996). While it appears that the Union Carbide Corporation (UCC) was involved in some measure of deceit about their operations in India (Pearce & Tombs, 1989), some lay blame on the Indian State because their alliance with TNC interests to promote industrialization at any cost, even safety.

Although the interest of profit can motivate the State to align itself with TNC agendas to the neglect of human and environmental health effects, the social construction of risk or the perception of risk from industrial accidents in a particular sociocultural context can also play a critical role in how well safety measures are heeded. For example, cultures with a bureaucratic social organization versus a religious social organization, as in the case of India, may perceive risk and pursue risk reduction measures differently (Wexler, 1989).

### **Leading Up to the Accident**

The general dynamics in the global economy between the various key actors and the interplay between political, economic, and social forces in their historical context are a critical foundation to understanding industrial accidents in developing or industrializing nations. However, to give this event the careful analysis it deserves by virtue of its previously unparalleled loss of life, a more in-depth examination of the specific players and forces surrounding the Bhopal tragedy is warranted.

### ***Union Carbide Corporation and Union Carbide India Ltd.***

The Union Carbide India Ltd (UCIL) plant was established in 1969 to produce pesticides for use in cotton production, while the promotion of the Green Revolution in developing countries was in full swing, UCC owned 50.9% of UCIL. The sharing of UCIL was prompted by India's efforts to gain control of its economic policy, in light of its long history of colonial status and being an object of corporate investment. India insisted that foreign corporations increase the share of stock available to indigenous stockholders; hence the dual ownership of UCIL between UCC and Indian investors. The plant was located in a populated area of the city and surrounded by poor, working class

Indians; but this was not thought to be a problem because the plant was originally designed to be a safe pesticide formulation plant. Fueled by increased food production, third world governments in general even offered subsidies to farmers who used proper pesticides. By the late 1970's, the competition increased and UCIL became aware of the need for changes to remain competitive.

UCIL began cost-cutting and in 1977, began to manufacture hazardous pesticides at UCC's directive. UCC insisted on this decision despite UCIL's initial objections and despite the close proximity of the plant to a populated area. One of these included methyl isocyanate (MIC), the primary gas of the Bhopal disaster. The initial application for a municipal permit for the MIC facility to reside within the existing Bhopal plant was rejected and then later overturned after a second application. Furthermore, the MIC unit, established in 1979, was built with construction material, monitoring devices and safety systems of substantially lower standards than Union Carbide's Institute in West Virginia. Incidentally, 1979 was the year after which agricultural use of pesticides began to decline and third world governments were curbing their free flow of subsidies to farmers using pesticides. No doubt this change was not unrelated to the beginning of the Debt Crisis.

### ***The Debt Crisis***

Three factors that marked the end of the Golden Age and the start of the Debt Crisis of the late 1970's to mid-1980's included the decline in growth rates in a number of wealthy countries, "stagflation" (high levels of both inflation and unemployment) in the US in the 1970's, and anti-statist governments elected in the US and two other industrialized nations. Key international financial and political actors became quite concerned that a significant number of deeply indebted developing countries would be

unable to continue making payments on their debts to the wealthy countries' commercial banks, leading to a collapse of the global financial system. Therefore, structural adjustment programs (SAPs) were imposed on these indebted nations to insure continued economic growth and flow of interest payments. The policy objectives of SAPs were reflective of ideological changes in rich-country governments, resulting in a new 'conventional wisdom' that embraces privatization (a shift in emphasis from the public sector to the private sector), liberalization (reducing barriers to free trade), and deregulation (reducing state control over the market).

### ***Cost-cutting Measures***

Because of the lower than anticipated demand for carbaryl pesticides, the corporation's profits lagged and cost-cutting drives were initiated by UCC headquarters in Danbury, Connecticut in 1979. The period from 1979-1984 was primarily characterized by discontinuity in managers and other workers. The successive (six in all) managers were increasingly from backgrounds unrelated to the chemical industry and more related to accounting and law. Moreover, one-half to two-thirds of the engineers resigned between 1982 and 1984, a number of whom were safety-conscious and most familiar with the MIC unit (Wexler, 1989). In the MIC storage unit itself, the work crew was halved from 12 to six workers; and the maintenance crew from six to two workers between 1980-1984 (Sambhavna Trust/Bhopal Peoples Health and Documentation Clinic, 1999). This period was also marked by low quality construction material, a de-emphasis on safety measures and an increase of hazardous procedures.

The inevitable consequences of the cost-cutting initiatives by UCC were breaches in safety and accidents. In 1981, the first full year that the MIC manufacturing facility

was operating, a plant operator was killed by a phosgene gas (a critical gas used for the storage and manufacturing of MIC) leak and three others were injured. The following month, another phosgene leak severely injured 28 workers. Four months later, a safety audit reported, “a total of 61 hazards, 30 of them major and 11 in the dangerous Phosgene/Methyl Isocyanate Units” (Sambhavna Trust/Bhopal Peoples Health and Documentation Clinic, 1999). Yet in October 1982, five months later, MIC escaped from a broken valve and four workers were exposed to the pesticide.

### ***Lack of Safety Measures***

Often times workers notice safety risks in the work place, particularly those involved in the production process. But because they have little power and may even be divided among themselves, their warnings are ignored or distrusted. In the case of Bhopal, workers, their trade unions, and local journalists did warn UCC and UCIL of the hazardous storage methods for MIC, but they were ignored. To complicate matters, UCC withheld information from UCIL concerning the dangers involved with the MIC production process; and both further withheld information from the Indian State and the workers at the plant and community members (Pearce & Tombs, 1989).

Six months prior to the tragedy, the Town Planning Department of the Madhya Pradesh (MP) government (province in which Bhopal is located) listed 18 industries as ‘obnoxious’ for their potential or actual harm of the environment. No mention was made of the pesticide industry despite the fact that the MP Environmental Pollution Control Board reported that atmospheric tests at UCC’s Bhopal plant revealed that the biological oxygen demand (BOD) and chemical oxygen demand (COD) levels were 10 to 100 times greater than the permissible limit (Ramaseshan, 1984).

Some UCC workers reported that in 1974, cattle belonging to residents of a large slum settlement near a pond where UCC had been dumping hazardous wastes, were killed from drinking the pond's water. Even when these incidences were brought to the attention of the Pollution Control Board, close monitoring and restrictions were not implemented (Ramaseshan, 1984).

Another example of the government's indifference is found in their decision not only to allow the hazardous pesticide production in a populated area but also in their allowance of residential growth in the immediate proximity of the UCC plant (Ramaseshan, 1984).

### ***Transnational Corporations and the Government***

Additional evidence of injustices toward local residents and workers is also reported by Ramaseshan (1984). He suggests 'pay-offs' from UCC to the government as is the pattern among TNCs. The company also purportedly established a special relationship with a local hospital to discourage them from examining UCC workers or showing them medical examination results. Reportedly, activists of Carbide Workers' Union were denied coverage of their safety concerns as well. When workers' unions from UCC did attempt to make the government aware of hazardous conditions at the plant, they found the alliance between the government and UCC prohibited the government from responding to their request for help. Therefore, even in the presence of appropriate legislation, without the political will to enforce laws, the environmental situation will not improve (Trotter, Day, & Love, 1989).

### ***Immediate Risk Factors***

As one might suspect, the immediate risk factors for a tragedy such as the one in Bhopal are numerous. Some include the following:

- The refrigeration unit, a safety device designed to prevent runaway reactions, should have kept the MIC close to zero degree Centigrade; but it had been shut off to save on electricity bills.
- The vent scrubber was designed to neutralize MIC, but it had been on standby mode for several months and the caustic solution used to neutralize the MIC had not been changed recently enough to be effective. Moreover, it was designed to neutralize only seven tons of MIC and the tank contained 40 tons.
- The inventory of MIC at UCC in Bhopal was dangerously high at 120 tons.
- The pipe leading from the vent scrubber to the flare tower, where any accidentally escaping gas should be ignited, had been disconnected due to corrosion; and it was not replaced.
- Gas pressure gauges were unreliable so that a high reading would not necessarily alarm the factory workers.

### **The Accident**

The accident occurred during routine maintenance operations at the MIC plant. Workers had used large amounts of water to clean the pipes leading to the MIC tanks and some entered one of the tanks through leaking valves and corroded pipes. Because the MIC was not sufficiently cooled, it triggered an exothermic runaway reaction in the tank, which contained 60 tons of MIC and other lethal gases, including hydrogen cyanide. An explosion of the gases under enormous heat and pressure and malfunctioning safety

systems caused the release of a cloud of poisonous gas into the surrounding heavily populated area. The siren was switched off so that the surrounding neighborhood community would not be “unduly alarmed” (Sambhavna Trust/Bhopal Peoples Health and Documentation Clinic, 1999). Unfortunately the poisonous gas was heavier than air, causing it to hug the ground, and it enveloped an area of about 20 square km before residents could run away.

### **Immediate Aftermath**

The immediate symptoms of poisoning were suffocation, burning eyes, drowning in fluids produced as a reaction to the poison, vomiting, seizures, and loss of bowel/bladder control. Also, expecting mothers’ children were aborted or stillborn. UCC has withheld toxicological information on leaked gases to protect their “trade secrets,” thereby impeding the effective medical treatment of victims. The information on medical consequences from exposure to the poisonous gases were conducted mostly by an Indian government agency and the Indian Council of Medical Research (ICMR), but their research was terminated in 1994. The ICMR studies, however, showed that toxins crossed into the blood stream, damaging the lungs, brain, kidneys, muscles, gastrointestinal system, reproductive system, immune system, and others. The most common chronic symptoms include breathlessness, diminished vision, loss of appetite, pain, menstrual irregularities, recurrent fever, cough, neurological disorders, fatigue, weakness, anxiety, and depression.

## **Scope of the Tragedy**

Because of the confusion in the midst of the chaos of the tragedy, there is a lack of clear consensus on the number of people killed and injured. Eyewitness accounts are about 10 times higher than the UCC estimate. The government's estimate of 1,700 was based on graveyard and crematoria records; but a number of reports reported a number of bodies being buried in the same grave or cremated on a common pyre. Moreover, when entire families were killed, no survivor could report the number dead; and some bodies were buried in other towns (Varma, 1986). Literature sources ranged in their estimates from 2,500 (Moore, 1993) to 10,000 (Varma, 1986) killed in the immediate aftermath and 120,000 (Alier) to 520,000 (Souza Porto & Freitas, 1996) injured. Further, it is estimated that the number who died later is approximately 10,000. In order to relay a sense of the ongoing nature of the struggle of the victims, the Bhopal Gas Peedit Mahila Udhyog Sangathan (BGPMUS) organization, an organization to support the victims of the tragedy, says that 10-15 people are dying every month from complications related to their exposure to the poisonous gases (Sambhavna Trust/Bhopal Peoples Health and Documentation Clinic, 1999). In addition to a loss of human life was a loss of vegetation and over 2,000 cows, buffalo, goats, and dogs were affected.

The immediate response of UCC was to say that the chemicals released act like tear gas and that the gaseous mixture is "non-poisonous"; and "The treatment is to wash with water" (Sambhavna Trust/Bhopal Peoples Health and Documentation Clinic, 1999). The first week following the disaster, a lung expert who was paid by UCC arrived in Bhopal to examine patients. He asserted that the permanent damage will not be worse than asthma. He is quoted as saying;

**Nearly every patient I examined was recovering rapidly....**

**could have been saved had they not panicked** (Sambhavna

Trust/Bhopal Peoples Health and Documentation Clinic, 1999).

### **Who is Responsible?**

At the time of the tragedy, UCC owned 50.9% of stock of UCIL and therefore had a great degree of control over UCIL. UCC essentially “possessed” the Bhopal plant, dictating their production and marketing strategies, safety procedures, and determining how and which chemicals were produced and stored. However, determination of the actual nature and degree of control UCC had of UCIL is not completely clear. For example, it is not understood how well UCC provided resources to insure that standard operating procedures could be followed and monitored. How well they considered the social and economic context of UCIL is also questionable. However, UCC seems to bear the brunt of responsibility for the actions and inactions that led to the disaster (Pearce & Tombs, 1989).

Immediately following the tragedy, the chief executive of UCIL expressed a willingness to compensate victims, even running into millions of dollars. UCC claimed that their insurance would be able to adequately cover compensation, relief, and clean-up operations. However, they had a number of points of assertion in their own defense in the wake of the tragedy as follows:

- Even though the Bhopal was managed by India nationals, it was truly as safe as the one at Institute, West Virginia.
- UCC was known for its excellent safety record, with sound standard operating procedures.

- The production of MIC in India, the siting of the plant, and the materials were decisions made by India, not UCC.
- UCC accused India's 'cultural backwardness' leading to poor enforcement of safety standards and overall management of the plant
- UCC suggested the possibility of sabotage causing the tragedy.

### **Compensation**

In the wake of the tragedy, the incommensurate values between various actors in this global network came to the surface and were marked by a complicated and lengthy litigation process. The different perspectives surfaced and became intensified after the event (Wexler, 1989). Table 1 gives a brief chronological sketch of some key post-tragedy events. Many refer to the aftermath of the tragedy as “the second disaster” because of the apparent injustices to the victims in receiving due compensation.

According to Moore (1993), the Indian government paid \$75 million for relief programs, including the establishment of twelve hospitals to aid the victims. Further, 1,000 apartments for widows of gas victims were built; however, much of the funding was funneled into poorly managed projects. The state government also spent \$2.5 million of relief money to build a vast training center for gas victims to be re-trained for jobs they are capable of performing; but according to Moore (1993), two years after its construction, the center had not yet benefited the gas victims. Receiving financial compensation for the victims has also been a frustrating process. According to Noronha

**Table 1: Chronology of Key Events Following the Bhopal Tragedy**

<b>Late 1980's</b>	Initial class action suit in New York dismissed on the grounds of “forum non conveniens”. Therefore, the state of India agreed for case to go back to India. (Nanda, 1991; Alier)
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<b>Jan 1988</b>	UCC files appeal in State of Madhya Pradesh to have the interim compensation order set aside, in which they are ordered to pay \$270 million interim compensation (UCC, 2001).
<b>April 1988</b>	Interim relief order upheld but reduced to \$192 million (UCC, 2001).
<b>Feb 1989</b>	Supreme Court of India directs final settlement of civil suit for the amount of \$470 million, far less than the original \$3 billion requested (UCC, 2001).
<b>Dec 1989</b>	Supreme Court of India upholds the validity of the authorizing of the government of India to act on behalf of the victims of the tragedy. They denied the government having any conflict of interest (UCC, 2001).
<b>1990</b>	The Supreme Court of India orders the government to finance interim payments to gas victims (Moore, 1993).
<b>1991</b>	UCC and UCIL agree to fund hospital in Bhopal as per Supreme Court request (UCC, 2001). Supreme Courts of India revoke criminal immunity for UCC officials and reinstate criminal cases, but upheld the civil suit settlement (Sambhavna Trust/Bhopal Peoples Health and Documentation Clinic, 1999).
<b>1993</b>	US Supreme Court declines to review US Appeals Court ruling, which reaffirmed that victims of Bhopal tragedy lacked legal standing to seek damages in the U.S. courts (UCC, 2001).
<b>Aug. 1999</b>	Dow Chemical announces merger with UCC (PANNA, 1999).
<b>Nov. 1999</b>	Lawsuit filed in federal court in New York charging UCC (under Torts Claims Act) and former CEO Warren Anderson for violating international law and fundamental human rights of the victims and survivors of the accident (Noronha, 1999).
<b>2000</b>	Lawsuit dismissed in Federal court in Manhattan on the grounds that plaintiffs lacked standing to sue and the claims for compensation have been settled. UCC was found to have complied with the orders of the Supreme Court of India (UCC, 2001).

(1999), over 95% of the claimants who received payments had only received \$600 in the case of injuries and \$3,000 in the case of death. These amounts are reportedly low even in India. Nearly 200,000 directly affected remained to be compensated and had to use

what money they received to pay interest from loans they needed to take for medical treatment while awaiting compensation.

### **Actors and Their Power**

From the perspective of the corporate entities, they seek to organize risk for the benefit of the public and have a strong vested interest in projecting a positive image to the public (Wexler, 1989). The government has a role to protect the common good of the public; however, as we have seen, they often align themselves with the interests of TNCs in developing countries to support economic growth. In this way their primary interests and role may be diverted to concerns about protecting economic interests and other less important agendas.

The citizens who were affected by the gas became victims and experienced a powerlessness relative to UCC or UCIL or the government. Although perhaps not to the same extent, post-tragedy workers such as doctors, social workers, and activists experienced a degree of powerlessness as well. Three factors that contributed to this powerlessness includes their lack of information, their lack of formal organization, and their lack of authority to give aid in a manner that they see fit.

One example of this powerlessness surfaced in a lack of knowledge disseminated about the contents of the poisonous gas mixture. This information was withheld by UCC to protect their “trade secrets.” A German toxicologist and Indian expert recommended the use of sodium thiosulphate injections based upon examination of autopsies of victims. The success in the use of these injections confirmed the presence of cyanide in the gas. Cyanide is a deadly poison but it has an effective antidote. UCC and the Indian government squelched the conjecture that cyanide was in the deadly gas. Had the

presence of cyanide been substantiated, they both would have become more deeply entangled in more serious litigation proceedings. Because cyanide is a known deadly poison, its safe handling procedures are different than for MIC. The director of health services banned the use of sodium thiosulphate; however this order was withdrawn after the evidence of its usefulness became overwhelmingly compelling. In this example, the power of knowledge was withheld from the public so as to protect the interests and reputations of UCC and the government of India. Even within the medical community, however, evidence of corruption was reported by Moore (1993) in the cases of some doctors taking bribes from victims to testify in their court cases. Moreover, preying agents would entice people with bribes to enable their cases to be moved up on the agenda.

### **Bureaucratic Industrialiam**

Visvanathan (1986) uses the term bureaucratic industrialism to describe the bureaucratization of the tragedy along with its broader association with modernization. Such ideas imply the world and people becoming parts of a machine and working together efficiently, but losing a broad perspective through categorized divisions of labor, as in an assembly line. In this 'grid of modernity', which sees industrialism as positive and inexorable, the victim becomes an embarrassment, an outcast, and is stigmatized. She applies these ideas to the Bhopal tragedy in the manner by which victims were "processed and consumed", beginning with the routinization of the office file. The bureaucratic system fails to appreciate the entire scope of trauma experienced by the individual seeking medical advice, compensation, or other services. In this bureaucratic mindset, only hard data and governmental certification determines what is legitimate and

real, and the victims become beggars, at the mercy of their government. The numbers distance the victim and the bureaucratic system from the trauma of the catastrophe and problems that arise in receiving services; and compensation culminates in feuding between clerical factions.

### **Community Organization**

Where the “system” failed to produce just and adequate compensation for the trauma the gas victims endured and continued to endure, the voluntary groups attempted to provide. Some such examples include Medico-Friends Circle (MFC), The Patriotic and People Oriented Science and Technology (PPST) group, the technical cell of the Morcha, the Kerala Sastra Sahitya Parishad (KSSP), and the Ekalavya. Their common success was keeping people from indifference about the tragedy. They aimed to remove the stigma from the victims and bring dignity to their grieving and recovery process. One strategy of the MFC, for example, was to move the site of examination of the victims from the sterile, indifferent setting of the hospital to the residential areas, such as the slum communities surrounding the plant. In this way, the victim could be surrounded by friends and family rather than being isolated.

#### ***Medico-Friends Circle***

The MFC was self-described as a circle of health professionals who were united by their common belief that the medical system biases its favor toward the wealthy. It purported the idea of the expert being a trustee, that scientific knowledge should be made publicly available; and it sought to integrate pain relief into the medical rehabilitation program.

In association with other voluntary organizations, MFC implemented a community survey. They found that compensation given to the gas victims had been inadequate and that what was needed was more than money. Mechanisms were needed to be put in place to restore a person to work, for example, in the midst of chronic health problems.

MFC supported a holistic view of disease, presenting disease and suffering as truly a community problem, not just an isolated individual's problem. They asserted that diagnosis is not merely a result of cause and effect mechanics; rather it is an analysis of interrelations. They saw the victim's words as an important aid in diagnosis as opposed to viewing the patient as merely a clinical specimen. MFC, representing the power of voluntarism, completed a well-respected report about the suffering in Bhopal and openly challenged the government's restrictive view of health with their "counter-expertise."

### ***Morcha***

Morcha, another volunteer group that was established only days after the disaster and comprised mainly of individuals from Bhopal, added to MFC's efforts a dimension of political protest. They wanted the government to exercise more fairness in their methods of offering relief and realized that given the scale of the disaster, grassroots volunteer movements would not suffice. Knowing that the government had sympathies with UCC's position, Morcha realized that political power was needed to pressure the government to improve their aid to the victims. They tried to bring the science and technology of the tragedy into the public domain. In so doing, they accused the government of withholding information about cyanide being a component of the gas and brought to question the competence of its scientific establishment. This undermined the

government's credibility and provoked them to pit themselves against Morcha. The government then sought to split Morcha, thereby lessening their power. They booked false charges against Morcha and justified their actions by classifying it as a 'law and order' problem.

Morcha's efforts were admirable in many ways and helpful to keep the cause of the victims alive, despite any shortcomings in their tactics. One negative aspect of their efforts is that they tended to dominate other groups so that the felt less significant. Morcha presented themselves as an alternative scientific establishment rather than presenting the two sides of science - the modern reductionist attitude that sees advances in technology as inexorably harmful to the environment and people, as opposed to the point of view that modern science does not have to be diametrically opposed to ecological health. Had they posed the true scientific debate that the Bhopal tragedy raises, it could have provided a strategic opportunity to promote a paradigm shift within the scientific community. Morcha lost some credibility with their haste to publish their suspicions before they were proven and some felt they mixed political efforts too much with medical relief. Finally, their confrontational tactics backfired when trying to pressure the government to offer a more just compensation by provoking the government to an adversarial position with Morcha (Visvanathan, 1986).

## **Conclusions**

An array of lessons can and should be gleaned from a tragedy such as the Bhopal gas leak. As discussed earlier in the paper, the enthusiasm of developing nations to embrace industrialization through a transfer of technology from industrialized nations rendered the developing nations vulnerable to risks involved with the use of these

technologies. Many were willing to import them and use them even at the expense of environmental and human health. Both the developing country and the industrialized nation, then, play a part in uncontrolled growth of hazardous industries in the host country. In the case of Bhopal, the potential profits derived from the Green Revolution no doubt played a key role in the drive to manufacture pesticides even if in an unsafe manner. The tragedy could be used to promote an ecologically sound use of science and technology when working with developing countries. Accountability should be established to prevent TNC's from allowing uncontrolled use of hazardous technologies in developing countries.

On a global scale, the standardization of safety policies between international organizations should be a major initiative, whether in the home country or in a developing country. This would involve the radical measure of removing the social and environmental disparities when addressing safety issues. Because the developing nations are especially vulnerable to breaches in safety standards, their pre-existing social, political, and economic policies and their culture's perspectives on safety needs would have to be considered before effectively implementing safety measures in the host country. Arriving at solutions which are successfully integrated in the host country's culture is a complex matter; however consulting with host country nationals who are aware of the specific safety needs could prove useful.

Bhopal's tragedy is a warning to TNC's to invest in effective problem-solving before investing in operations in a foreign country so that proper safety procedures are in place. For example, a crisis management team should be previously assembled, in full knowledge of the potential scale of disaster that could occur with the size inventory

of hazardous chemicals that were stored. This team would include physicians, public relations personnel and other key professionals in the time of an emergency (Trotter, Day, & Love, 1989).

The accident could cause governmental bodies to reconsider strengthening laws that protect victims of such accidents where there are loopholes. Further, it could prompt the formulation of new international standards, such as a “Right to Know” policy that would allow victims to know the precise contents of the gas mixture which assaulted them; or to know what chemicals are in the workplace and how to treat exposures before they occur.

The power of social movements, such as among the Morchas and MIC, demonstrated that despite their lack of political savvy, they do have power together to keep issues alive, to fill in gaps of need for the powerless, and to bring accountability to those more powerful than themselves. Effective changes can be made to improve the lives of those who don’t have anyone else to take up their cause for them.

Although the scale of the Bhopal disaster was unique, the factors that led to its occurrence are not uncommon. In fact, overall, industrial accidents have been on the rise. Usually, the causative factors are not due to the highly advanced technology that is used or because of the complexity of production processes. They are usually caused by mismanagement factors (Pearce & Tombs, 1989). From the international level, down to the grassroots level, all players must place highest priority on safety standards. This includes an emphasis on the participation of workers, who are often the ones with the least power, yet most deeply affected by accidents. In order to implement such drastic changes in the current culture of the global economy, the institutionalized sphere outside

the national level will need to change at its core, including with it the State's willingness to truly stand for the good of the society above the ambition for economic growth.

## References

Alier, J.M. Ecological Conflicts and Valuation: A Study of the Relations between Political Ecology and Ecological Economics. Unpublished manuscript, Universitat Autònoma de Barcelona.

Gershman, J., Irwin, A. (2000). Getting a Grip on the Local Economy. In Kim, J.Y., Millen, J.V., Irwin, A., & Gershman, J. Dying for Growth. Monroe, ME: Common Courage Press

Minkler, M., Wallace, S.P., McDonald, M. (1995). The Political Economy of Health: A Useful Theoretical Tool for Health Education Practice. International Quarterly of Community Health Education, 15 (2), 111-125.

Moore, M. (1994). The Second Disaster in Bhopal. Business and Society Review. Winter, 26-8.

Nanda, M. (1991). Waiting for Justice: Union Carbide's Legacy in Bhopal. Multinational Monitor, 21, 15-19.

Noronha, F. (1999). Union Carbide Sued in U.S. for 1984 Bhopal Gas Release. Corporate Watch. [On-line]. Available:  
<http://www.corpwatch.org/trac/bhopal/lawsuit.html>

Pearce, F., Tombs, S. (1989). Bhopal: Union Carbide and the Hubris of the Capitalist Technocracy. Social Justice, 16 (2), 116-45.

Pesticide Action Network North America (PANNA). (1999). So What do Dow Chemical and Union Carbide Have in Common?? Corporate Watch. [On-line]. Available:  
<http://www.corpwatch.org/trac/bhopal/merger.html>

Ramaseshan, R. (1984). Profit against Safety. Economic and Political Weekly, 2147-2150.

Sambhavna Trust/Bhopal Peoples Health and Documentation Clinic. (1999). What Happened at Bhopal?. Corporate Watch. [On-line]. Available: <http://www.corpwatch.org/trac/bhopal/factsheet.html>

Souza Porto, M.F. & Freitas, C.M. (1996). Major Chemical Accidents in Industrializing Countries: The Socio-Political Amplification of Risk. Risk Analysis, 16 (1), 19-29.

Trotter, R.C., Day, S.G., Love, A.E. (1989). Bhopal, India and Union Carbide: The Second Tragedy. Journal of Business Ethics, 8, 439-454.

Union Carbide Corporation. (2001). Bhopal: Chronology. Bhopal. [On-line]. Available: <http://www.bhopal1.com/chrono.htm>

Varma, V.S. (1986). Bhopal: The Unfolding of a Tragedy. Alternatives, XI, 133-145.

Visvanathan, S. Bhopal: (1986). The Imagination of a Disaster. Alternatives, XI, 147-165.

Wexler, M.N. (1989). Learning from Bhopal. Midwest Quarterly, 31, 106-29.