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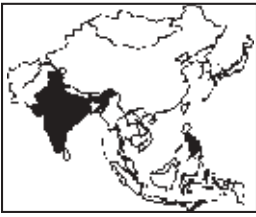
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# The Bhopal gas tragedy 1984 to ? The evasion of corporate responsibility

*Barbara Dinham with Satinath Sarangi*

Barbara Dinham is a sociologist and director of Pesticide Action Network UK (PAN UK). She has kept links with Bhopal since the disaster, organized a tour of Bhopal survivors to meet UK groups fighting industrial hazards, visited Bhopal for the tenth and fifteenth anniversaries, and promoted UK initiatives to raise awareness and support the survivors. PAN UK hosts the Bhopal Medical Appeal to raise funds for the work of the Sambhavna Trust.

Satinath Sarangi is a metallurgical engineer by training, with no regrets about straying from his profession. For the last 16 years in Bhopal, he has been part of the survivors' agitations, medical care and research efforts, publication initiatives and solidarity campaigns on the disaster. In 1995, he established the Sambhavna Trust and launched the Bhopal People's Health and Documentation Clinic. He also writes fiction for children.

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1. Dinham, Barbara (1989), *Lessons from Bhopal, Solidarity for Survival*, Journeyman, London.

**SUMMARY:** This paper describes the inadequacies in the response of the Union Carbide Corporation to the accidental release of the highly toxic gas, methyl isocyanate, from its plant in Bhopal, India in 1984. Over 20,000 people are estimated to have died from exposure to this gas since 1984, with some 120,000 chronically ill survivors. Union Carbide fought to avoid compensation or to keep it very low. The long, much delayed process of distributing compensation focused on minimizing payouts to victims. The corporation tried to blame the accident on a disgruntled employee, whereas key parts of the safety equipment designed to stop the escape of the gas were not functioning or were turned off. The corporation has always sought to underplay the health effects and has refused to release its research on the health impacts of the gas (which could have helped develop more effective treatment). In addition, the medical services in Bhopal have failed to develop a health care service that offers sustained relief and treatment to the communities most affected. This paper also describes the work of the Sambhavna Trust, a charitable body set up to work with the survivors, and its programme to develop simple, more effective, ethical and participatory ways of carrying out research, monitoring and treatment. Its programmes combine traditional and western systems for health care and it ensures that individuals and communities are actively involved in all aspects of public health.

## I. THE INDUSTRIAL ACCIDENT

IN DECEMBER 1984, the worst industrial accident on record occurred in Bhopal, India. Just four hours after the leak of methyl isocyanate (MIC), the works manager at Union Carbide's Bhopal plant said: "Our safety measures are the best in the country."<sup>(1)</sup> Barely 100 yards from his office, thousands of people lay dead and dying. Tens of thousands more were being crippled for life. People were terrified, as they woke up to find themselves surrounded by dense poison clouds. Neither Union Carbide nor the local authorities provided direction, support, help or guidance that night or in the following days. In the intervening years, victims' organizations have fought relentlessly for justice, recognition and support. They have received little either through the legal process or from the Indian government. Today, the toxic legacy of the disaster continues with tens of thousands of survivors suffering from chronic illnesses, the persistent presence of poisons in the soil and water and breast milk, the alarming rise in cancers and congenital problems among children born to exposed people. An initiative in the city, the Bhopal People's Health and Documentation Clinic, started by the Samb-

havna Trust, demonstrates an important practical way of supporting and working with communities victimized by corporate crime.

## II. UNION CARBIDE RESPONSE: DELAY AND DENIAL

UNION CARBIDE CORPORATION (UCC) continues to flee from the ongoing criminal case in India which relates to the leakage of deadly MIC from its pesticide factory in Bhopal. The web site maintained by UCC on Bhopal still claims that the "...incident was caused by a disgruntled employee who introduced a large volume of water by connecting a water hose directly to the tank."<sup>(2)</sup> The basis for the company's position is a report by the public relations firm Arthur D Little, paid for by Union Carbide but which they claim to be an "independent investigation". The reality is that MIC is a highly volatile gas which must be stored at zero degrees centigrade. Yet the refrigeration unit in the factory had been shut down to cut costs as per directions from Union Carbide headquarters in Danbury, USA. Any escaping MIC should have entered a caustic-soda scrubber to be neutralized. The scrubber was not operating on the night of the disaster. Escaping toxic gases were supposed to go to the flare tower, where a pilot flame would burn off the gas. The pilot flame was off and the pipeline to the flare tower disconnected. Water sprayers designed to take care of leaks in the atmosphere did not have sufficient pressure to reach the required height.<sup>(3)</sup> The sabotage claim, therefore, is unsustainable. But even if it were credible, the hazardous design of the plant and the blatant lack of safety systems as well as reckless cost-cutting are sufficient to underline the liability of the US corporation.

The corporation and its chairman, Warren Anderson, were charged with manslaughter, grievous assault and other serious offences. They have, however, stayed away from the court proceedings for the past ten years and the Indian government has yet to take any steps towards extraditing either Anderson or representatives of Dow Chemical.

In addition to denying any responsibility, UCC has adopted multiple strategies for corporate survival.<sup>(4)</sup> It fought for the legal case to be heard in India, where any compensation was likely to be lower than in the US; it delayed the legal case at each stage in its progress through the courts; it divested itself of products that could be targeted by a consumer boycott campaign (Eveready-TM batteries, anti-freeze-TM automotive products, gladwrap-TM plastic food wrap and pesticides, including carbaryl and aldicarb, sold as Sevin and Temik, which had been made at the Bhopal plant); it took on debts of over US\$ 6 billion to put off potential corporate raiders; in spite of the fact that Union Carbide India Limited (UCIL) was 51 per cent owned by UCC, and the plant fully designed by UCC, the company argued that the subsidiary was independent; and, finally, in 1989 it persuaded the Indian government to settle without consultation with the victims.<sup>(5)</sup>

The outcome of the protracted legal battle was disastrous for those affected by the gas. The government of India had appointed itself the sole representative of the Bhopal victims. It originally claimed compensation in the order of US\$ 3 billion but settled for just US\$ 470 million. As per the settlement, the Indian government agreed to pay any additional claims. The long process of distributing compensation focused on minimizing payouts to victims. Tens of thousands had lost the ability to work, were in

2. Web site maintained by Union Carbide: [www.bhopal.com](http://www.bhopal.com)

3. Morehouse, Ward and M Arun Subramaniam (1986), "The Bhopal tragedy: what really happened and what it means for American workers and communities at risk", Council on International Public Affairs, New York.

4. Dembo, D, W Morehouse and L Wykle (1990), *Abuse of Power. Social Performance of Multinational Corporations: the Case of Union Carbide*, New Horizons Press, New York.

5. US Second Circuit Court of Appeals in Manhattan ruled that UCIL was a separate and independent legal entity managed and staffed by Indian citizens, 14 January 1987.

debt from the costs of medical treatment and have continuing extensive medical expenses.

UCC's determined response to evade responsibility and compensation claims was driven by the need to convince shareholders and financial markets that the company would not be crippled by legal actions and massive financial claims on assets and profits. While this is a standard corporate reaction, there is no doubt that UCC went to extraordinary lengths to achieve its goal. It was aided and abetted by the financial markets, whose main concern after the disaster was whether and how the company would survive.

The financial world closed ranks. Not one company, industry organization or government body publicly argued for the closure of Union Carbide and the stripping of its assets to pay full compensation to those affected. Internally, transnational corporations producing hazardous chemicals reviewed their production strategies and, as a result of Bhopal, many raised the standards of their plants in developing countries. But for the people of Bhopal, these actions were of little consequence.

In a UCC plant located in Beziers in the south of France, and producing the same pesticides as in Bhopal, the trade union had undertaken a successful campaign at the end of the 1970s for safer production. Expenditure on health and safety reached an unprecedented 20 per cent of capital costs. The Beziers plant did not store MIC but made batches only as required for production. After the disaster, the Beziers trade union expressed concern that it had not made contact with other Union Carbide plants to pass on details of its success.<sup>6</sup> However, corporate strategies – still common to all transnationals – forcefully discourage contact between separate plants, often even between plants in the same country, let alone across continents. Collective bargaining on wages, conditions and occupational safety and health is actively prohibited.

The gas-affected population of Bhopal has formed a number of organizations which are still fighting for "justice", particularly in the form of criminal prosecution of the corporate leaders of UCC and the right to a dignified disease-free life. Most actions have failed but the survivors' organizations have not given up their struggle. In November 2001, they gained one victory with a decision by the US Second Circuit Court of Appeals that overturned earlier rulings and affirmed the environmental damage claims of survivors.<sup>7</sup> Seven individual victims and five organizations representing survivors and activists filed the suit against Union Carbide and its former chairman Warren Anderson. The court decision has made it possible to access corporate documents from Union Carbide regarding its control and environmental safety guidelines at the Bhopal factory. Union Carbide and Warren Anderson are now answerable to charges of contaminating the groundwater and soil in and around the Bhopal factory premises and causing health damage to thousands of people. In February 2001, Union Carbide Corporation was taken over by Dow Chemicals. Victims' organizations are angry that the corporation responsible for the worst industrial accident in history could enter oblivion. However, the organizations believe that following the court ruling, it will "...be possible to make Dow Chemical answer charges of poisoning thousands of people residing in the neighbourhood of the abandoned factory."<sup>8</sup> Significantly, Dow has opened four subsidiaries in India and has substantial investments in this country, unlike Union Carbide which has folded its operations in India. Judgments against Dow in India are likely to be more easily enforceable than those against Union Carbide.

6. "Hazards of pesticide production – trade union organization in Union Carbide, France" (1986) in *The Bhopal Papers: A Report of a Conference on the Bhopal Tragedy*, Transnationals Information Centre, London and Bhopal Victims Support Group.

7. US Second Court of Appeals, August Term, 2000. Argued 16 April 2001, decided 15 November 2001, Docket No 00-9250.

8. Bhopal Gas Peedit Mahila Stationery Karmachari Sangh et al. (2001), "Bhopal activists declare victory in US courts", press release, 29 November, [www.corpwatch.org](http://www.corpwatch.org)

### III. THE HEALTH LEGACY

THE FULL IMPACT of MIC on health remains unknown. Union Carbide continues to claim as "trade secrets" over 60 years of research (including research on human "volunteers") on MIC. Local victim support organizations believe that the withholding of information and the propagation of misinformation has impeded health care efforts.

Immediately after the disaster, the Indian Council of Medical Research (ICMR), a government agency, was nominated to monitor the health effects. ICMR estimated, on the basis of mortality figures, that over 520,000 exposed persons had poisons circulating in their bloodstream causing different degrees of damage to almost all the systems in the body. The ICMR stopped all research on health effects in 1994 and has yet to publish the findings of 24 research studies involving over 80,000 survivors. The official agency for monitoring deaths was closed in 1992.

The Sambhavna Trust was established in 1995 as a charitable independent body working with Bhopal survivors through medical care, research, health education and information dissemination. In September 1996, using funds raised primarily by a public campaign in the UK, it established the Bhopal People's Health and Documentation Clinic.<sup>(9)</sup> The clinic's research indicates that well over 120,000 chronically ill survivors are in desperate need of medical attention, and an estimated 30 people are dying every month from exposure-related illnesses.<sup>(10)</sup> While official figures report over 5,000 deaths attributable to the exposure, a government agency, the Centre for Rehabilitation Studies, reported 2,165 deaths attributable to toxic exposure in 1997 alone. Unofficial, and more correct, estimates place the current death toll at over 20,000.

Union Carbide continues to underplay the health effects. Its web site says "...severe injury to the lung is limited to a small percentage of the population and there is no serious residual eye disease. Medical studies have shown that massive, one-time exposure to MIC has not caused cancer, birth defects or other delayed manifestations of medical effects."<sup>(11)</sup>

The work of the Sambhavna Trust and full hospital beds in the city say otherwise. Breathlessness, a persistent cough, diminished vision, early-age cataracts, loss of appetite, menstrual irregularities, recurrent fever, back and body aches, loss of sensation in limbs, fatigue, weakness, anxiety and depression are all common symptoms of survivors. There is evidence of an alarming rise in cancers, tuberculosis, reproductive-system problems and other problems such as growth retardation among children born after the disaster.

The absence of medical information means that local hospitals have no treatment protocols specific to the exposure-induced multi-systemic problems that exist in Bhopal. Of the two official publications resembling treatment protocols, the most recent by the ICMR is 11 years old and covers little except the management of respiratory problems. Most of the medical community in Bhopal is not aware of the existence of this document. The state government has spent over US\$ 43 million on health care but has failed to offer sustained relief, leading to a proliferation of private doctors and nursing homes. In the severely affected areas, most of the meagre compensation has been spent on private doctors, nearly 70 per cent of whom are not professionally qualified. Drugs for temporary symptomatic relief have been the mainstay of medical care ever since the morning of the disaster. The indiscriminate prescription of steroids, antibiotics and psychotropic drugs is compounding the damage caused by the gas exposure.

9. "The Bhopal gas tragedy, 1984-?" (1988), Report from the Sambhavna Trust, Bhopal, India.

10. According to data published by the state government in 1998, the difference in mortality between exposed and unexposed populations was 4.33 per thousand in 1997, which works out at 2,165 deaths attributable to exposure in 1997 alone. Data published by the Centre for Rehabilitation Studies, an agency of the state government, show that there were 380 deaths attributable to exposure to Carbide's gases in the year 2000.

11. www.bhopal.com

12. Bertell, R and G Tognoni (1996), "International medical commission on Bhopal: a model for the future", *National Medical Journal of India* Vol 9, pages 86-91; also Cullinan, P, S D Acquilla and V R Dhara (1996), "Long-term morbidity in survivors of the 1984 Bhopal gas leak", *National Medical Journal of India* Vol 9, pages 5-10; and Ministry of Concern for Public Health, Buffalo NY and the International Institute of Concern for Public Health, Toronto, Canada (1996), *International Perspectives in Public Health* Vols 11 and 12.

13. An observation made by the International Medical Commission on Bhopal, an independent medical investigation undertaken by doctors in 1994: see reference 12, Bertell and Tognoni (1996).

14. See reference 11.

15. Rajiv Bhatia (1999), "Analysis of Bhopal hospital trust drug prescription data – preliminary results", unpublished report, December.

#### IV. NO LACK OF HOSPITALS – ACUTE LACK OF TREATMENT

DESPITE REPEATED ADVICE from many medical professionals, a community health perspective has failed to inform health care delivery among the gas-affected population.<sup>(12)</sup> Budgetary allocations to community health services have remained at under 2 per cent and there are no community health workers operating from the hospitals. As a consequence, such vital areas as health education and community involvement in medical management remain neglected.

There is no shortage of hospitals in Bhopal. So many government hospitals have been built since the 1984 disaster that an independent medical investigation by the International Medical Commission on Bhopal observed that there are more hospital beds per 1,000 population there than in the US or Europe.<sup>(13)</sup> These large hospitals, however, are not situated near the areas most affected by the gas; the expensive equipment installed in them is seldom used; and treatment offered addresses only symptoms. All hospitals fail to document the health status and treatment given to hundreds of thousands of survivors under long-term medical care, and there are no consistent patient records.

In 2000, the Bhopal Hospital Trust (BHT), built with funds from the sale of Union Carbide's Indian shares that had been confiscated in the criminal case, opened to patients. It is now an independent trust based in the UK that is part of the Indian Bhopal Memorial Hospital Trust (BMHT). The BMHT operates "community clinics", with facilities for the treatment of eye, lung and heart problems<sup>(14)</sup> – although it should be noted that heart problems have not been associated with exposure to MIC. When Rajiv Bhatia, Medical Director in the Department of Public Health, San Francisco, audited prescriptions given to over 400 patients he found that "...treatment is not based on specific organ system pathologies and, rather, that drugs are prescribed for short term symptomatic relief of non-specific symptoms."<sup>(15)</sup>

Given the nature of the problems of chronic exposure-induced illnesses and the need for continuous medication, systematic efforts to find non-toxic drug alternatives or drug-free therapies are long overdue. Such a search is even more imperative in the context of rich possibilities in long-established indigenous health care systems in India. Systems such as Ayurveda, Unani and yoga, that are known to provide sustained relief without contributing to the toxic load, have been given only token recognition in the official system of medical care. The government budgetary allocation to medical care under these systems is under 1 per cent.

#### V. CREATING POSSIBILITIES: SETTING UP THE SAMBHAVNA TRUST

IT IS INDEED a gloomy background. A people surviving the most gruesome odds. A company carrying on with business as usual. A government that is about to close its files on the "expendable people" of Bhopal. And a prevalent system of health care most possibly doing more harm than good.

This background provided the context for the Sambhavna Trust's existence. "Sambhavna" is a Sanskrit/Hindi word meaning "possibility" – or, if read as "sama" "bhavna", it means "similar feelings" or "compassion". In the prevailing situation of despair in Bhopal, the workers and support-

ers of Sambhavna believe that the possibility of stopping the medical disaster in Bhopal lies in generating compassion.

The work done by the Sambhavna Trust in the last six years shows that it is possible to evolve simple, safe, effective, ethical and participatory ways of carrying out research, monitoring and treatment within the realities of Bhopal. However, Sambhavna is small relative to the magnitude and complexity of the disaster. Its clinic has provided direct treatment to about 11,000 people and has provided support to about the same number through its health initiatives in ten communities close to the Union Carbide factory.

The Sambhavna clinic's white walls follow the curve around the corner of two quiet streets, half a kilometre from the disused Union Carbide factory. It is still a long walk for most of the survivors who come for care, and many come on cycles or in auto-rickshaws. It is a modest-sized residential building that has been renovated for use as a clinic. A tall and shady mango tree, a tiny herb garden and rows of potted medicinal and flower plants create an ambience of tranquillity.

Of the 20 staff members, 9 are survivors of the disaster, 8 are women and 4 are qualified in medicine, 2 of whom are specialists. Employees are paid well in comparison to those in other local non-government institutions and a ratio of 1:3.5 is adhered to in determining minimum and maximum salaries. Most, if not all, of the decisions regarding the day-to-day and long-term work of the clinic are taken by consensus at the weekly meeting of the full-time staff members. A coordinator is chosen every two months from among the staff members.

The Sambhavna clinic carries out a range of interlinked activities: medical care, community health work, research and monitoring, documentation, seminars and training.

## VI. MEDICAL CARE

PROVISION OF APPROPRIATE medical care in the Bhopal People's Health and Documentation Clinic is one of the central activities of Sambhavna. It is based on clear principles, including that therapy must not compound the injuries sustained as a result of exposure and must be based on the specific complex of symptoms rather than on individual symptoms. A proper system of registration and constant monitoring of the effect of therapeutic intervention and research on the health status and efficacy of treatment must be integral to the provision of medical care. The medical care utilizes a range of services, in particular allopathic, Ayurvedic and yoga. The pathology laboratory carries out routine microscopic and biochemical tests on blood, urine, sputum and vaginal and cervical smears. The clinic takes care to eliminate unnecessary and harmful drugs and to include Ayurvedic and yoga therapies in the overall treatment regime. All medicines are provided free of cost and more than 60 are produced from herbs in the clinic itself. Utmost care is taken to ensure that people are well-informed about prescribed medicines.

## VII. COMMUNITY HEALTH CARE

SAMBHAVNA'S APPROACH TO community health consists of empowering the community and individuals to take control of their health. The

<b>Table 1: Medical services and achievements, 1 April 2000-30 September 2001</b>	
<b>Care offered</b>	<b>Patient visits</b>
Allopathic treatments	12,813
Gynaecological care: the clinic is the only facility in Bhopal providing regular cervical screening, examination and treatment to survivors	1,580
Mental health care (visiting psychiatrist two days a week): survivors suffer panic attacks, insomnia or disturbed sleep, anxiety, depression, irritability and impaired memory	2,336
Ayurvedic care: prescriptions of medicines and massage therapy described in standard texts rather than factory-manufactured drugs; predominant use of herbal drugs over mineral preparations; and use of modern investigative facilities and tools for objective assessment	9,256
Yoga: different combinations of physical postures, breathing exercises and cleansing actions that positively impact the systems and organs related; particularly beneficial for those suffering chronic diseases involving the respiratory, musculo-skeletal, neurological and endocrine systems	348

four community health workers are the only ones of their kind in all Bhopal. The community health team surveys have investigated tuberculosis (TB) care and health education, monitoring and house visits. The team has conducted door-to-door surveys in five communities with a total population of about 10,000 to generate a database on the demography, health and health care status as well as the social, economic and environmental condition of the residents. Health workers identify persons in need of special medical attention and ensure that this is made available either at the Sambhavna clinic or elsewhere.

Sambhavna pays special attention to the control of tuberculosis at a community level. Despite official knowledge of the unusually high prevalence of tuberculosis in the survivor population (over three times the national average), there are no official TB initiatives. Work in TB care consists mainly of education, identification of persons with symptoms, supervision of treatment and constant health monitoring. The "patient leaders", recovered TB patients who provide effective inspiration and guidance, share much of this work.

## VIII. RESEARCH

WITH ITS LIMITED resources, Sambhavna has completed four research projects and several more are underway. The government agency has wound up its office for monitoring exposure-related mortality and, according to survivors' organizations, has maintained a consistent policy of underestimating health impacts. Sambhavna is monitoring exposure-related mortality through "verbal autopsy" (VA), a scientific method used for establishing the cause of death of individuals in a community. This is particularly useful in determining the cause of death in situations where the proportion of deaths occurring under medical care is low and where no autopsies are carried out. Investigations and interviews with relatives are



submitted to a VA assessment panel consisting of three eminent Indian physicians. The Head of the VA group at the London School of Hygiene and Tropical Medicine, UK is the adviser to the project. The information collected up to 31 March 2001 shows that in the 81 cases of death monitored through the project, 56 cases (69 per cent) showed a strong association between MIC exposure and death.

Another research project assessed drug distribution in gas-affected Bhopal and found that only 16 per cent of drugs sold were rational while 46 per cent were either harmful or useless.

In 2001, with the help of voluntary workers, the clinic gathered data on the physical growth of persons born between 1982 and 1986. These data show that the next generation of survivors has also been affected by its parents' exposure to Union Carbide's gases.

On the other hand, a follow-up of the effects of yoga therapy on chronic respiratory disorders has found significant and sustained improvements in lung function in all persons and a discontinuation of medication by more than half of the persons in the study.<sup>(16)</sup>

### IX. DOCUMENTATION

MUCH INFORMATION ON the December 1984 Union Carbide disaster in Bhopal and its aftermath is lost, unavailable or classified. A large part of the information remains within the circle of bureaucrats, scientists, medical researchers and academics. Government efforts to collect and distribute information are non-existent. It is difficult for non-governmental initiatives to document the continuing disaster fully but there continue to be groups dedicated to providing information and to ensuring that the spotlight remains on the plight of the victims.<sup>(17)</sup> The Sambhavna documentation unit works on collecting, collating and distributing medical and other information related to the disaster. Information is made available to the clinic staff, survivors, researchers, journalists and others.

### X. SEMINARS AND TRAINING

THE SAMBHAVNA TRUST has organized a range of seminars involving local, national and international medical professionals, scientists, environmentalists and survivors' organizations. Seminars have addressed current medical issues, gynaecological and obstetric problems, the benefits and possibilities of Ayurvedic treatment, and there have also been policy and awareness-raising conferences. Sambhavna members have participated in training programmes on traditional therapies, community control of TB and cervical cytology.

### XI. FUNDING THE CLINIC

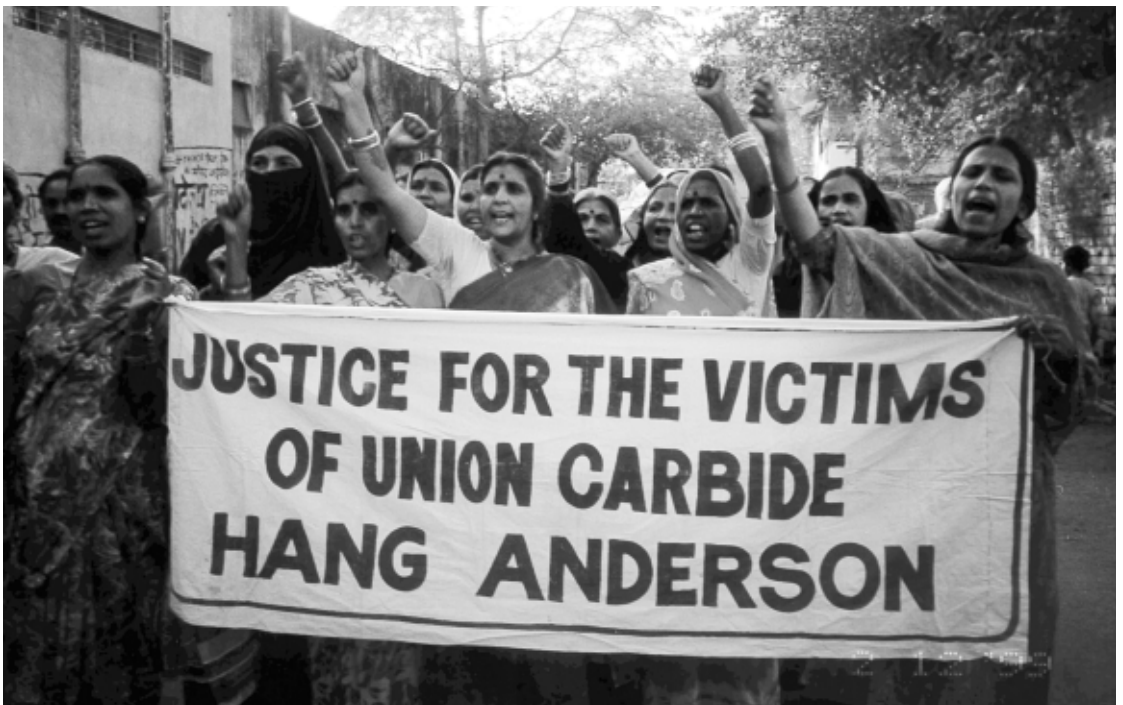
SAMBHAVNA'S FUNDS ARE obtained primarily through the compassion of the international community, and consist particularly of small contributions from a large number of individuals in the UK, Japan, US and India. On the tenth anniversary of the disaster, the Bhopal Medical Appeal, Sambhavna's UK-based support group, published an advertisement in the *Guardian* and raised around UK£ 70,000 from over 5,000 individuals.

16. "Effects of yoga practices for respiratory disorders related to the Union Carbide gas disaster in 1984", paper presented to XVI World Congress of Asthma, Buenos Aires, Argentina, October 1999.

17. See, for example, Bhopal web sites [www.bhopal.org](http://www.bhopal.org), [www.bhopal.net](http://www.bhopal.net), the report of the Permanent People's Tribunal on Industrial Hazards and Human Rights, [www.pan-uk.org](http://www.pan-uk.org) and a report by *The Other Media*, Delhi, India, 2001.



Women from the survivors' organization (Gas Peedit Mahila Stationery Karmachari Sangh) on the 15th anniversary of the Bhopal accident.



A demonstration by women from the survivors' organization on the 15th anniversary of the Bhopal accident.

Subsequent runs of the advertising campaign have raised awareness and collected an additional UK£ 50,000. The annual advertisement in December 2001 produced an extraordinary effect, so far raising a further UK£ 40,000. Funds have been provided by a small number of foundations in the US, Italy and Switzerland. Donations are also collected at the clinic from survivors and their sympathizers.

Annual running costs for the Bhopal Peoples' Health and Documentation Clinic have been under US\$ 30,000. The major expenses are salaries, the purchase of medicines and equipment, renovation and furnishing. The clinic runs on a very tight budget and judicious attention to all expenditure is required.

## XII. CONTAMINATION FROM THE UNION CARBIDE SITE STILL A THREAT

THE CONTAMINATION OF groundwater in the neighbourhood of the Union Carbide factory was a serious problem even before the 1984 disaster. Official and unofficial studies (including one by Greenpeace in 1999)<sup>(18)</sup> have established the presence in groundwater of highly toxic heavy metals and organic chemicals that cause cancer and severe damage to almost every system in the body. For thousands of families in about ten communities, this is the only source of drinking water.

With the objective of making people aware of the long-term adverse health effects of drinking polluted water, and to encourage them to organize themselves to remedy the situation, Sambhavna launched a health education programme in one of the communities – Atal Ayub Nagar – in July 2000. Perceptible changes were seen within two months. The residents of Atal Ayub Nagar collectively pressed demands for safe drinking water before municipal officials. In September 2000, six water tanks, each with a capacity of 10,000 litres, were placed at different locations in Atal Ayub Nagar and filled with water from another part of the city.

## XIII. LESSONS FROM LOCAL ACTION

SAMBHAVNA BELIEVES THAT the participation of individuals in a community is crucial for the success of any community-based health programme. Through educational campaigns and meetings, the clinic has encouraged four communities to form health committees. Members of these committees voluntarily accept responsibility for identifying individuals in need of medical attention, counselling regarding treatment, organizing meetings and holding health camps in the communities. The trust perceives its work as part of the survivors' struggle in Bhopal and works closely with the survivors' organizations.

The importance and relevance of the work of Sambhavna is now being recognized and it has been awarded a number of prizes, including the Japanese Tajiri Muneaki Prize 1999, the Inner-Flame Award 2001 from the state governor, and the Mead 2001 award from the USA.

The clinic would take on more if its resources were greater. It is particularly concerned that:

- the number of persons offered care represents only a fraction of the survivors in need of special care;
- the clinic's distance from the severely affected communities is a real

18. Labunska, I, A Stephenson, K Brigden, R Stringer, D Santillo and P A Johnston (1999), *The Bhopal Legacy*, Greenpeace Research Laboratories, University of Exeter, November.

problem for a large number of persons;

- a substantial number of those under care have not received sustained relief, and the problem of a recurrence of the symptoms remains;
- the patient load of individual doctors is high;
- epidemiological and clinical research studies on the consequences for long-term health have not been conducted; and
- it has not yet been able to start regular treatment of cervical cancer, as per schedule.

From experience, Sambhavna has derived a number of lessons. The limitations of modern medicine in treating modern industrial diseases are apparent in Bhopal, and the combination of traditional and western systems of health care used in the clinic has had significant success and should be studied worldwide. Individuals can, and should, be active participants in the process of healing, and the community needs to be actively involved in all aspects of public health. Systems of health surveillance and environmental monitoring can be developed and can evolve through the active participation of those in a community who are suffering from exposure to hazards. In the case of Bhopal in particular, documentation of the long-term consequences of exposure is part of the survivors' ongoing struggle not to forget. Support for the work of the clinic has shown that it is possible to depend upon the compassion of ordinary individuals and to generate enough funds without corporate charities, large grants from foundations or government assistance. And it is possible to generate opportunities for hope through creative and collective intervention in a situation of despair.

More details of the work of the Sambhavna Trust can be obtained from the web site: [www.bhopal.org](http://www.bhopal.org). To support the work of Sambhavna and the clinic, contact the Bhopal Medical Appeal, Pesticide Action Network UK, Eurolink Centre, 49 Effra Road, London SW2 1BZ; e-mail: [admin@pan-uk.org](mailto:admin@pan-uk.org); web site: [www.pan-uk.org](http://www.pan-uk.org).