

In the matter of :

Writ Petition No. 11708 of 1985

by

Dr. Nishit Vohra & Others

versus

State of Madhya Pradesh & Others

Ref. : Supreme Court order dated November 4, 1985, constituting a Committee of seven experts to make recommendations regarding medical relief and other related matters of the Bhopal gas victims.

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Final Report on  
Medical Relief and Rehabilitation of  
Bhopal Gas Victims

By

Dr. Anil Sadgopal\* & Dr. Sujit K. Das\*\*

Members (Minority)

Supreme Court Committee for Bhopal Gas Victims

AUGUST 1988

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\*\*Address : Drug Action Forum, West Bengal, S-3/5 Srabani, Sector III,  
Salt Lake, Calcutta 700 091

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BHOPAL GAS VICTIMS

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DR. ANIL SADGOPAL  
DR. SUJIT K. DAS  
MEMBERS (MINORITY)  
SUPREME COURT COMMITTEE FOR BHOPAL GAS VICTIMS

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August 30, 1988

To,  
The Chief Justice  
Supreme Court of India  
New Delhi

Dear Sir,

Sub : Submission of the minority 'Final Report on Medical Relief and Rehabilitation of Bhopal Gas Victims'.

Ref : Supreme Court order dated November 4, 1985, in the matter of Writ Petition No. 11708 of 1985 by Dr. Nisit Vohra & Others vs. State of M. P. & Others.

We draw your kind attention to our letter dated May 11, 1988 enclosing 'Interim Report on Sodium Thiosulphate Therapy of the Bhopal Gas Victims' on the first term of reference before the Committee and indicating that the final report dealing with the remaining terms of reference would be submitted within four months.

2. Accordingly, we now submit to you the minority 'Final Report on Medical Relief and Rehabilitation of Bhopal Gas Victims'. This report provides an account of the chaos, indifference and directionlessness prevailing in matters relating to medical relief, rehabilitation, documentation and research in Bhopal. In continuation of the earlier Interim Report, this report, too, presents ample evidence of the failure of the authorities and official agencies in fulfilling their duty towards the Bhopal victims.

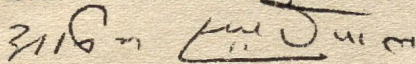
3. In Section 4.0 of this report, we have identified the central issues and tasks which require urgent attention of all those concerned with the continued plight of the survivors of the gas disaster.

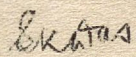
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4. The analysis of the Bhopal experience has led us to the inevitable conclusion that a special body, to be named as National Medical and Rehabilitation Commission for Bhopal Gas Victims, needs to be constituted to provide leadership and a sense of purpose to the programmes meant for the welfare of the gas victims. The Commission, preferably chaired by a former or sitting Judge of the Supreme Court, may be composed of scientists, doctors, rehabilitation experts, social workers of national credibility and members of voluntary organisations having a record of making scientific contributions to the cause of the Bhopal victims, besides enlisting representatives of concerned official agencies as well. A possible list is given in Annexure III.
5. It is proposed that the Commission needs to be vested with the necessary authority and be provided with adequate resources to enable it to play a policy-making, supervisory, monitoring and co-ordinating role over all State and Central Government agencies working for the gas victims. Such a body is expected to stand out as an expression of national will and thereby safeguard gas victims' Right to Life and ensure social justice. The question of precedence, legal or otherwise, may not be allowed to come in the way, for, the Bhopal Gas Disaster is itself without precedent in world history.

With regards,

Yours sincerely,

  
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Encl : 'Final Report on Medical Relief and Rehabilitation of Bhopal Gas Victims'

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List of Abbreviations

- Annexure I            -    Minutes of the Supreme Court Committee meeting held on December 13-14, 1986 (two pages)
- Annexure II           -    List of Reports/Materials to be Procured from Respective Agencies of Government of M.P. or Government of India (two pages)
- Annexure III         -    A Possible Composition of the Proposed National Medical and Rehabilitation Commission for Bhopal Gas Victims (five pages)

LIST OF ABBREVIATIONS

1. CSIR - Council of Scientific and Industrial Research, New Delhi
2. DRDE - Defence Research and Development Establishment, Gwalior
3. ICAR - Indian Council of Agricultural Research, New Delhi
4. ICMR - Indian Council of Medical Research, New Delhi
5. IR - 'Interim Report on Sodium Thiosulphate Therapy of the Bhopal Gas Victims' submitted by the Minority Members of the Supreme Court Committee for Bhopal Gas Victims to the Supreme Court of India on May 11, 1988
6. IVRI - Indian Veterinary Research Institute, Izzatnagar, U.P.
7. NIOH - National Institute of Occupational Health, Ahmedabad
8. Scientific Commission on Bhopal - Scientific Commission for Continuing Studies on Effects of Bhopal Gas Leakage on Life Systems (New Delhi), appointed by the Government of India
9. TISS - Tata Institute of Social Sciences, Bombay

## 1.0 INTRODUCTION

In the Minority 'Interim Report on Sodium Thiosulphate Therapy of the Bhopal Gas Victims' (hereinafter abbreviated as IR) submitted to the Supreme Court of India on May 11, 1988, we documented how the Majority Members, belonging to the ICMR and Government of Madhya Pradesh, placed obstacles in Committee's functioning and eventually scuttled its work (see Section 1.0 of IR). They achieved this partly by refusing to requisition and examine relevant scientific evidence concerning the therapeutic role of sodium thiosulphate in the treatment of the gas victims (see Section 3.1 of IR). Even more serious damage was done to the cause of treatment and rehabilitation by the Majority Members' refusal to undertake work on four out of the five terms of reference during the Committee's almost eleven months of functioning from January to December 1986 (see Annexure I herewith). Whereas the first term of reference was concerned with the specific issue of detoxification of the gas victims by sodium thiosulphate therapy, the remaining four terms of reference covered much wider domain as follows:-

(a) carrying out proper epidemiological survey and also house-to-house survey of the gas affected victims for the purpose of determining the compensation payable to the gas affected victims and their families; to draw up a scheme for carrying out survey;

(b) ensuring proper medical facilities to the gas affected victims; to give directions from time to time for carrying out survey and providing medical relief;

(c) to draw up a scheme for provision of medical relief and for monitoring the implementation of the scheme; and

(d) to give directions to produce before it the results of the surveys which have already been done in order to

ascertain what further work remains to be done.

In Section 4.0 of IR, we have referred to the various constraints placed by the Majority Members which prevented us from collecting critical information for formulating independent recommendations on the remaining terms of reference. These constraints included (a) functioning without clear objectives, (b) imposing confidentiality on the entire deliberations, (c) avoiding inquiry into the impact of Union Carbide's medical stand and the performance of the ICMR/Government agencies, (d) working with limited information, (e) working without the aid of statistical, epidemiological and other standard scientific tools, and (f) analysing medical evidence without a toxicological perspective. In our communication dated February 11, 1988 to the Supreme Court, we have drawn attention of the Hon'ble Judges to how our repeated attempts to overcome the above-named constraints in Committee's functioning were thwarted. In this communication we have presented a meeting-wise analysis of the Committee's records to demonstrate how our numerous scientific proposals on critical aspects of treatment and rehabilitation of the gas victims were deliberately ignored by the Committee. Since we realised the vital importance of completing the tasks given to the Committee by the Supreme Court, we suggested concrete steps in the IR which would enable us to gather relevant information about the medical and rehabilitation facilities in Bhopal and thereby formulate our recommendations on the remaining terms of reference (see Sections 10.20 to 10.24, pp. 218-219 of IR).

In view of the urgency to complete the tasks before the Committee, we submitted extracts from our IR in advance on April 18, 1988. These extracts included the Section on recommendations which constituted the operative part of the IR. We had hoped that necessary directions with respect to our recommendations in Sections 10.20 to 10.24 for proceeding ahead would be

issued at the following hearing i.e. on May 3, 1988. In support of these recommendations, we had already submitted an application dated February 21/24, 1988, and repeated our request for specific support from the Supreme Court in the application dated May 3, 1988. In brief, we had requested the Supreme Court to direct the concerned State and Central Government agencies to:-

(a) make available to us copies of all relevant survey and research reports concerning the gas victims as referred to in Table I in the IR, (Section 10.20 of IR),

(b) accord us facilities for interviewing the victims, doctors, health workers, and medical and research authorities (Section 10.21 of IR),

(c) directly acquaint ourselves with the working of the medical institutions serving the gas victims and ascertain their suitability for providing adequate medical relief and rehabilitation (Section 10.22 of IR),

(d) provide us with information on medical documentation exercise undertaken by the Directorate of Claims (Section 10.23 of IR), and

(e) make available to us all essential infrastructural support for completing the remaining tasks in the Supreme Court order (Section 10.24 of IR).

Further, in our applications dated February 21/24, and May 3, 1988, we requested the Supreme Court to permit us to associate experts from different disciplines for the above purpose.

Being unacquainted with judicial procedures, we were concerned as well as dismayed that no directions for proceeding ahead were issued to us inspite of three hearings since the submission of our recommendations i.e. on May 3, May 11 and August 10, 1988. It may also be noted that we had made

recommendations as far back as October 1987, for obtaining relevant information from various Government agencies and for reorganising available toxicological data and medical research programmes (see our Preliminary Report of Concern submitted on October 26, 1987). These, too, have brought forth no positive results so far. An important recommendation for making available MIC samples to investigators at the Bose Institute, Calcutta for undertaking critical animal studies also seems to have failed to receive priority (see paragraph No. 5.7 in our Preliminary Report of Concern and also Section 10.16 in IR).

It is strange, as evident from the records presented in our communication dated February 11, 1988 and the IR, that Government authorities, high or low, managed to ignore specific requests for information or enquiry from the Committee and its members despite unambiguous directions from the Supreme Court. In view of this situation, we feel that it is imperative for the sake of gas victims' welfare to institutionalise, on the one hand, the remaining tasks given to the Committee and, on the other, to increase the stature of the body entrusted with the responsibility for undertaking these. It is clear that the tasks before us call for multi-disciplinary expertise and resources. With this in mind, we hereby propose the constitution of a National Medical and Rehabilitation Commission for Bhopal Gas Victims and outline its functions. A similar proposal was made by us to the Committee in November 1986, only to be ignored [see Annexure Nos. 22 (b) & (c) in our communication dated February 11, 1988]. A proposal for constituting the National Commission is outlined later in this report (see Sections 5.0 and 6.0). The need to form the National Commission is all the more critical in light of the recent direction issued by the Supreme Court, on the basis of our recommendation in the IR, to Union Carbide to disclose vital toxicological information. Such information, if and when submitted, would need to be carefully scrutinised and

evaluated from the standpoint of both its validity and adequacy. Moreover, Union Carbide would be expected to submit the results of its continuing studies, especially those with animals exposed to higher levels of MIC, from time to time (cf. footnote on p.167 of IR). Clearly, the Supreme Court would need the assistance of a readily available panel of multi-disciplinary experts to evaluate this information for a fairly long time. The National Commission would be an ideal body for this purpose.

## 2.0 SALIENT FEATURES OF EARLIER REPORTS AND SUBMISSIONS BY THE MINORITY MEMBERS

In order to provide a context for appreciating the genesis of the idea and recommendations presented in this final report, it is necessary to briefly review the salient features of our earlier findings.

### 2.1 Preliminary Report of Concern (October 26, 1987)

In this report, we presented toxicological data, compiled by a team of investigators at the All India Institute of Medical Sciences (New Delhi), which provided evidence of persisting toxins in the bodies of the gas victims. This evidence contradicted, for the first time, Union Carbide's oft-repeated stand that MIC, liable to rapid breakdown on contact with water on lung and eye surfaces, causes only local injury and does not enter blood stream. On this basis, Union Carbide claimed that MIC could neither cause systemic damage to the internal organs of the body nor can it persist to expose the victims to enhanced risks of mutagenic, carcinogenic and immunological injuries. In view of the emerging evidence for persistence of toxins, the preliminary report called for reorganisation of current as well as future medical research programmes for gas victims and for undertaking an effective programme of detoxification. Further, the significance of this fresh toxicological information lay in its implications for determining compensatory as well as punitive damages

from Union Carbide.

2.2 Interim Report on Sodium Thiosulphate Therapy  
(May 11, 1988)

The IR delved into a large body of data from Government and non-Government sources on sodium thiosulphate therapy and also analysed the relevance of medical research programme with a view to decipher the cause of mortality and morbidity resulting from exposure to MIC and the products of its exothermic reaction and thermal decomposition. The main findings are as follows:-

(a) The Government clinics/hospitals did not administer sodium thiosulphate to gas victims as per ICMR's guidelines. Only about 0.8% of the symptomatic gas victims received full course of sodium thiosulphate injections by June 1985, the period most critical for detoxification. By June 1986, this figure was still as low as 3.5%, with the voluntary effort being responsible for more than a third of this.

(b) Union Carbide systematically conducted a campaign of misinformation and disinformation regarding the probable chemical composition of the toxic emission from its Bhopal Plant, and the toxic effects of MIC and other poisonous chemicals. By misleading Indian authorities on the question of persistence of toxins and role of antidotal therapy in the treatment of the gas victims, Union Carbide became liable for increased mortality and chronic suffering of thousands of gas victims. The IR recommends that Union Carbide be directed to disclose all relevant medical information (cf. Section 10.12 of IR).

(c) There are several reports of symptomatic relief on administration of sodium thiosulphate to hundreds of gas victims, irrespective of their urine thiocyanate levels. Further, ICMR could not provide any scientifically valid data to show that ailing gas victims excreting less than 1 mg% thiocyanate in urine did not respond to sodium thiosulphate therapy. ICMR also

lacked reliable data on the difference in the urine thiocyanate levels of gas-exposed and unexposed population groups. In spite of this, ICMR imposed an arbitrary eligibility condition, vide its guidelines dated January 2, 1986, to deny detoxification therapy to all those ailing gas victims who excreted less than 1 mg% thiocyanate in their urine. The IR recommends removal of this arbitrary eligibility condition and suggests that the earlier ICMR guidelines of April 4, 1985 may be restored for an interim period so that sodium thiosulphate therapy would once again become available to all ailing gas victims (cf. Section 10.5 of IR). The IR further recommends that scientifically designed investigations be urgently undertaken to determine fresh guidelines for sodium thiosulphate therapy (cf. Section 10.1 to 10.4 of IR).

(d) Evidence emerging from a number of Indian research projects has established that MIC enters the bloodstream and reacts with various tissue components, thereby persisting and causing multi-systemic disorders.

(e) The Directorate of Claims (Government of Madhya Pradesh) has selected urine thiocyanate level as one of the medical parameters for characterising the gas victims and assessing their morbidity status. The IR has shown that the Directorate is apt to interpret these data erroneously, thereby leading to a gross underestimation and misrepresentation of the morbidity status of the gas victims. The IR has recommended two specific measures to rectify the situation. First, the entire urine thiocyanate data compiled by State Government's Medico-Legal Institute be subjected to a retrospective analysis to decipher toxicological information as indicated in Section 10.9 in the IR. Second, the urine thiocyanate level of individual gas victims be analysed in a population-based perspective so that these parameters could be used for distinguishing gas-exposed localities from unexposed localities (see Section 10.19 of IR).

The population-based interpretation of urine thiocyanate data will enable the authorities to identify gas-exposed localities for the purpose of relief and rehabilitation on scientific grounds rather than selecting these on an arbitrary basis or political considerations. A population-based interpretation would also ensure that gas victims with low urine thiocyanate levels shall not be erroneously left out from consideration of medical relief, rehabilitation and compensation.

(f) The most crucial finding of the IR concerns the conduct and performance of administrative authorities responsible for studies and researches on the Bhopal disaster. A detailed review of the work done by CSIR, ICMR, Medico-Legal Institute (Bhopal), various Departments of Gandhi Medical College (Bhopal), Chief Medical Officer (Gas Relief), Gas Relief Commissioner and other agencies has revealed a lack of scientific approach, planning and coordination. Hence, the medical research programmes, lacking a toxicological direction, failed to produce any positive impact upon the line of treatment. This problem was further compounded by the sustained policy of suppression of scientific information which prevented an open scrutiny of data, on the one hand, and led to widespread alienation of the scientific community, both official and non-official, from research on Bhopal victims, on the other. The IR has also presented evidence that, while the research administration faltered, there was no dearth of competence and foresight on the part of the investigators both within and outside the above-named organisations. Indeed, a major failure in the administration of Bhopal research is the inability of national networks, e.g. ICMR and CSIR, to mobilise the high quality of scientific talent and resources available in the country for resolving the central scientific questions concerning the Bhopal disaster. Finally, the IR has formulated the line of investigation which needs to be adopted in order to decipher the physio-pathological basis of

both short-term and long-term ailments, and also to evolve an effective strategy for detoxification of the gas victims (cf. Sections 7.6 & 7.7 of IR). The IR recommends several important measures for reorganising the medical research programme in general and specific toxicological investigations in particular (cf. Sections 10.7, 10.8, 10.9, 10.10, 10.11, 10.13, 10.14, 10.15 & 10.16 of IR). These measures also emphasize the critical importance of dissemination of scientific information, open scrutiny of research studies and involvement and mobilisation of scientific personnel from outside the official network.

(g) The IR has presented ample evidence to show that a number of scientists of competence and commitment working under the aegis of several voluntary organisations have already made significant contributions to studies and researches on the Bhopal disaster. They did so despite the constraints placed upon their work by the Union Carbide lobby and certain sections of the official scientific machinery. The functioning of the Supreme Court Committee, as recorded in the IR, is in itself an example of this phenomenon.

### 2.3 Communication Dated February 11, 1988

In this submission, we have documented the lackadaisical functioning of the Committee. Through a meeting-wise analysis, it is demonstrated that the official members of the Committee systematically ignored repeated scientific proposals made by the non-official members and also refused to requisition or examine information relevant to the tasks placed before the Committee.

### 3.0 STATE OF MEDICAL RELIEF AND REHABILITATION

#### 3.1 Mortality Figures

Although the Government of Madhya Pradesh has recorded the number of deaths due to gas-exposure as being around 3000,

this must be by far an underestimate. The reasons are as follows:-

(a) From the very beginning of the disaster there were widespread newspaper accounts of dead bodies being illegally disposed of in the Narmada river and in the surrounding forests. There are also published accounts of interviews of people who were thus dumped on the assumption of being dead but later regained consciousness to return to Bhopal alive! An aborted attempt to dispose of the dead illegally was even recorded in an interview of a gas victim in a Hindi video film directed by Muzaffar Ali, a well-known art film director. Ironically, this film was sponsored by the Director of Publicity, Government of Madhya Pradesh. The film was, however, canned by the State Government following test screening before the authorities in Bhopal. One of the Minority Members had the opportunity to see a preview of the film at the residence of a faculty member of Jawaharlal Nehru University, New Delhi.

(b) According to a Government release, the survey conducted by the Tata Institute of Social Sciences (Bombay) showed that several hundred people were untraceable at the time of the survey in January-March 1985. No explanation for this observation was ever made available.

(c) A large majority of the people who died during the three and a half years since the gas leak as a result of chronic and multi-systemic ailments caused or compounded by the gas-exposure have been excluded from the official mortality list.

(d) Foetal loss due to increased rate of spontaneous abortion and still births as a result of gas-exposure has not been taken into account for the purpose of determining relief and compensation. This also needs to be considered in calculation of total mortality.

### 3.2 Lack of Arrangement for Post Mortem

There were repeated demands by victims' organisations to make facilities for post-mortem investigation available in the gas-exposed area so that the cause of deaths occurring in the chronic phase could be established. However, neither the public was informed of the need for such investigation nor any such facility made available. Consequently, it is estimated that hundreds of deaths resulting from chronic ailments caused by gas-exposure could not be included in the official list of mortality [cf. Section 3.1 (c) above] .

### 3.3 Systemic Nature of Illness

From the very beginning, Union Carbide's claim of MIC causing only local injury on lungs and eyes and its denial of the possibility of systemic toxicity was unquestioningly accepted by the State Government health authorities. This official stand was maintained by them for several months despite overwhelming evidence of multi-systemic disorders, including involvement of the reproductive system, which had surfaced within two weeks of the gas leak (cf. Sections 7.1.2, 7.3 & 7.5.2 of IR).

### 3.4 Line of Treatment

It is understandable that the gas victims were given only symptomatic and conjectural treatment in the acute and sub-acute phases of gas-exposure. Nothing else was possible since Union Carbide provided only spurious and misleading medical information regarding the effects of the toxic emission on the human body and the line of treatment (cf. Sections 2.3 and 6.1 of IR). However, the situation should have changed following ICMR's recommendation on sodium thiosulphate therapy in February 1985. As shown in Section 5.5 of IR, only a small fraction (less than 1%) of ailing gas victims were given the antidotal therapy in spite of ICMR guidelines. Repeated demands and agitations by victims' organisations to undertake a time-bound programme of detoxification of the gas-exposed population on the basis of ICMR

guidelines were ignored by the State Government. An account of the impediments placed by a determined anti-thiosulphate lobby, working under the impact of Union Carbide's campaign, within the State Government is given in Sections 6.2 to 6.7 of IR. In August 1985, the Supreme Court issued specific directions to the Government to submit a scheme for time-bound detoxification of the gas victims but the health authorities preferred to remain unresponsive (cf. Sections 2.2 and 2.6 of IR). It was further expected that the much-acclaimed medical research programme organised by ICMR would provide an insight into the toxicological basis of ailments and deaths and would help evolve a strategy for antidotal therapy. As shown in Section 7.6 of IR, the ICMR-sponsored research programmes lacked co-ordination and a toxicological direction. Consequently, after more than three and a half years of research worth crores of rupees, there is no evidence of its impact on the line of treatment in Bhopal, which continues to date to be only symptomatic.

### 3.5 Over Drugging

A characteristic picture of Bhopal victims is of one sitting on the floor and displaying an array of multi-coloured capsules and bottles of all shapes and sizes, doled out to him or her by Government clinics/hospitals. Drugs was one item which was distributed with 'generosity' with little attention paid to their harmful side-effects. In spite of a written warning issued by an ICMR expert group in May 1985 against the over-use of steroid drugs, there was no serious attempt to control the use of such medicine. The well-known risks of indiscriminate use of steroid drugs were ignored. Lack of proper medical records added to the problem of over-drugging and irrational drug therapy, as the patients, in desperation for some relief, went around from one doctor to another and were often administered the same prescription over and over again. This disorder was the rule, while the health authorities busied themselves

in creating a controversy over sodium thiosulphate, a time-tested antidote with no known side-effects recorded in medical literature (cf. Sections 6.2 to 6.4 of IR).

### 3.6 Confusion with Tuberculosis

Although it is true that gas-exposure has aggravated pre-existing lung ailments, the health authorities readily played into the hands of Union Carbide by confusing a large number of gas victims as patients of tuberculosis, thus excluding them from the list of gas victims. A well-documented case of a gas-exposed woman called Durga Bai was presented in the 'BHOPAL' bulletin (published by the Bhopal Group for Information & Action), followed by expert comments by Dr. P.M. Parikh of Tata Memorial Cancer Hospital (Bombay) establishing that the woman was wrongly diagnosed as a tuberculosis patient (see bulletin's issues of October 1986 & January/February 1987). This tendency to label gas victims as TB patients continues to date.

### 3.7 Spontaneous Abortion and Injury to Women's Health

There were well-documented newspaper accounts within the first few weeks of the gas leak indicating a spurt in the rate of spontaneous abortion which occurred in the Sultania Zenana Hospital. A Medico Friend Circle study in February 1985, confirmed this and recommended that couples should avoid conception until they were detoxified by sodium thiosulphate therapy (see Annexure 6(b) of IR). Similarly, a survey conducted by a victims' organisation in the last week of December 1984 collected evidence of widespread menstrual disorders and increased incidence of leucorrhoea (white discharge) among gas-exposed women in J.P. Nagar. In March-April 1985, two women gynaecologists (Drs. Rani Bang and Mira Sadgopal) recorded evidence of increased rate of gynaecological diseases amongst gas-exposed women (cf. mimeographed reports listed as references 112 & 113 in IR). In spite of this mounting evidence of damage to women's reproductive

health, the Government health authorities refused to accept the truth for several months. The State Health Minister went to the extent of denying any rise in spontaneous abortion rate in a statement in Vidhan Sabha in July 1985. The proforma of ICMR's epidemiology study, begun in March 1985, did not even make a provision for recording gynaecological disorders. It was only more than a year later that the State health authorities and ICMR were willing to acknowledge a rise in spontaneous abortion rate and the possibility of gynaecological disorders as a result of gas-exposure. Strangely enough, the only epidemiological study of the effect of gas-exposure on the rate of spontaneous abortion which is publicly available today is the Pregnancy Outcome Study conducted by Medico Friend Circle in September 1985.

### 3.8 Absence of Psychiatric Care

Although the devastating psychiatric trauma caused by the disaster is well-known, hardly any serious heed has been given to this affliction. This is inspite of the early studies conducted by psychiatric experts from King George Medical College (Lucknow) and National Institute of Mental Health and Neuro Sciences (Bangalore), showing that a fairly significant percentage of the gas victims were suffering from neurotic depression, anxiety state, adjustment reaction, hysteria, insomnia and loss of memory. In early 1985, NIMHANS (Bangalore) submitted a plan for training psychiatric health workers with the objective of introducing a community-based programme of psychiatric support. A couple of attempts to train medical officers through workshops were made in 1985 at the initiative of NIMHANS, but these, too, ended in a dead end, as the authorities continued to ignore the psychiatric needs of the gas victims.

### 3.9 Children's Health

Several studies have established that the gas-exposed children have suffered special problems of physical and mental health. It is also known that there has been adverse impact of

gas-exposure on the performance of children in schools indicating impairment of facultative development. These facts called for an appropriate programme of medical and social rehabilitation for tens of thousands of children in the gas-exposed localities. The only known response by the authorities was in the form of unimaginatively operated Anganwadis and that, too, for small children only.

### 3.10 Medical Rehabilitation

An imaginative and scientifically planned programme of medical rehabilitation, involving physiotherapy (mostly respiratory), occupational therapy, and vocational and social rehabilitation, has been widely held by experts to be a critical need of the Bhopal victims. Its significance in the rehabilitation of those handicapped by a reduced working capacity, blurred vision, hypersensitisation, over-irritability to foreign particles (smoke, dust & pollutants) and psychiatric afflictions cannot be disputed. Yet there is no evidence today that such a plan was even instituted in Bhopal, though it has been categorically recommended by ICMR in its 'Working Manual-I' (June 1986). It may be noted, for instance, that respiratory physiotherapy is acknowledged as the only effective treatment for residual lung disability which is not amenable to drug therapy. Suggestions for undertaking a community-based systematic programme of respiratory physiotherapy came from several medical quarters in the early months of 1985. It is inexplicable that the Government did not pay any heed to this treatment which could have made a significant difference, when the limitations of drug therapy were becoming well-known. The failure to evolve a plan of medical rehabilitation has been admitted by the State Government in its affidavit filed before the Supreme Court in this Writ Petition in February 1988. The affidavit states that, even after a passage of three years, the Government is only 'in touch with the experts in Bombay and (in the National Institute of Occupational Health) in Ahmedabad for conducting scientific studies

on occupational disabilities suffered by the affected population. It will be possible to go into details in this regard only after completion of this exercise'. According to available information, the gas victims have still not seen any benefit from the expected outcome of the aforesaid Government exercise. There is also no evidence that the Gas Relief Commissioner has even begun to do groundwork for designing sectoral plans for rehabilitating or readjusting work-schedules and working conditions of gas victims in different employment sectors. Railway porters, construction labourers, textile workers, sawmill employees, hand cart pushers, 'Hammals' in grain and other markets, auto-rikshaw drivers and people in several such other trades have continued to work without any evident change in their work conditions. The IR has already documented the loss in income which the gas victims have suffered as a result of being unable to carry on their work at earlier pace or capacity (see pp. 94-96 of IR). Health injury caused by gas-exposure has also increased the suffering of women engaged in domestic labour, who now find it difficult to carry on even their routine tasks. No concrete step has been taken to reduce their suffering by providing running water supply, sanitary living conditions, smokeless chulhas, easily accessible fuel supply etc. The quantitative claims made by the Government in its affidavit to the Supreme Court further betray the low priority accorded to vocational rehabilitation. The affidavit states that only 'about 3,900 persons have been trained and 400 persons are undergoing training in vocations and skills like ....., and only 'about 2,200 women are being given opportunities for employment'. Although the affidavit refers to a survey for determining the member of persons needing economic rehabilitation, it is silent regarding the total number of gas victims who require medical rehabilitation. The future plan for market survey, industrial estate and a comprehensive training complex, promised in the Government affidavit, does not provide any technical design to make it worthwhile and convincing.

### 3.11 Absence of a Community-based Approach

There has been no attempt to plan medical relief or rehabilitation on a community-based approach. All treatment was administered primarily from clinics/hospitals. Possibilities of organising respiratory physiotherapy, psychiatric support system or occupational therapy and conducting surveys and periodic investigations (e.g. pulmonary function tests and exercise tolerance tests) on a community basis were totally ignored. Few studies based in the community were organised. For instance, the entire data on urine thiocyanate levels compiled by the Medico-legal Institute have come from hospital-attending patients, thereby making it inappropriate for characterising the gas-exposed population as a whole (cf. Section 8.1.7 of IR).

### 3.12 Provision for Adequate Nutrition

The role of ensuring adequate nutrition, in both quantity and quality, for the recovery and rehabilitation of gas victims cannot be overstressed. This has special significance in the case of Bhopal victims since the majority of them were already in the low-income category. The State Government undertook a programme of distributing free food grains (wheat and rice), sugar and edible oil for thirteen months and milk for children and mothers for five months (cf. Government affidavit). However, the introduction as well as the termination of this programme was arbitrary, as was also the case in determining the quantum of food to be included in the free ration scheme. There also appeared to be no logical basis for selection of either the individual recipient or the locality, political clout and other such considerations often being the deciding factor. It may also be noted that there were widespread allegations of corruption in the distribution of food supplies.

### 3.13 Medical Records and Health Cards

It was quite understandable that the victims who thronged the hospitals in tens of thousands within hours of the gas leak, could not be issued any reliable record of their diagnosis and treatment. However, this need not have been the case weeks later when the situation had settled down and the critical importance of medical records had been internationally acknowledged from the standpoint of medical relief, rehabilitation and compensation. Yet the health authorities in Bhopal failed to rise to the occasion and the state of records remained abysmally poor at least until August 1986, when the Minority Members of the Committee had an opportunity to inquire into this affair. In May 1986, the Committee learned from the Chief Medical Officer (Gas relief) that the sixteen Government clinics/hospitals under his charge had not maintained any reliable record of symptomatic relief on administration of sodium thiosulphate, a critical aspect of gas victims' treatment (cf. Section 8.1.3 & 8.1.4 of IR). In a visit to Jawaharlal Nehru Hospital, one of the Minority Members discovered that only sketchy records of urine thiocyanate levels and sodium thiosulphate therapy were available despite the hospital being a special investigational institution used by ICMR scientists (cf. Section 8.1.5 of IR). The disorganisation and confusion in maintaining hospital records even in the departments of Gandhi Medical College and Medico-Legal Institute have been amply documented in Sections 8.1.1, 8.1.2 & 8.1.4 of IR. Contrary to all ethical practice in medicine, the health authorities refused to provide the victims with health cards or a copy of even sketchy medical records. The attention of the Supreme Court was drawn to this fact in this Writ Petition and direction was issued to the State Government in August 1985 to issue health cards to the victims. The situation, however, did not improve much. Even a critical observation by the Heerji Committee, sent by the Prime Minister in August 1985,

did not change the attitude of the health authorities. A documented account of this issue is available in Section 6.9 of I.R.

### 3.14 Epidemiology Survey

An epidemiology survey is expected to yield critical information for identifying and following up gas victims and gas-exposed localities. This entails categorising victims with respect to degree of affliction, evolving an index for loss of working capacity and providing evidence for the relationship between gas-exposure and mortality/morbidity. A well-conducted epidemiological study is imperative to gain a reliable assessment of the extent and depth of the public health problem, without which scientific management is not possible. Further, in well-known public health disaster cases of recent years, epidemiological study has been acknowledged as a judicial basis for assessment of the quantum of compensation. In spite of the indispensibility of epidemiological data for Bhopal gas victims, the ICMR-sponsored epidemiology project was conducted in a perfunctory manner and did not serve any of its objectives. As shown by the Minority Members, the ICMR epidemiology exercise not only lacked a statistical design and scientific rigour in collection of data but also grossly underestimated the morbidity status and mortality rate in various gas-exposed localities (see Committee's records for the criticism submitted by the Minority Members). An idea of the worthlessness of this ICMR study may be gained by an examination of the data on 'Crude Death Rate' and 'Infant Mortality Rate' of different gas-exposed localities of Bhopal. The ICMR data shows that these rates are not only lower than the Indian and Madhya Pradesh averages for the urban areas but also lower than the averages for the many of the countries of Europe and North America ! The ridiculous inference which one may be forced to draw from this study is that gas leak in Bhopal has led to a reduction in mortality rates! Although the Committee

refused to discuss the criticism submitted by the Minority Members in July 1986, Dr. M.P. Dwivedi, Director of ICMR's Bhopal Gas Disaster Research Centre and also a member of the Committee, admitted thirteen months later that 'corrective measures have been taken and the report have (sic) been improved' (cf. Annexure No. 20 of IR). However, Dr. A.S. Paintal, Director-General of ICMR as well as Dr. Dwivedi did not make available a copy of the improved report despite our repeated requests (cf. Table I of IR). The most disturbing aspect of this matter, however, is the recent stand taken by the Government in February this year in its aforesaid affidavit that 'no new epidemiological survey is contemplated; neither is one considered necessary' !

### 3.15 Medical Documentation Exercise

In its aforesaid affidavit, the Government has claimed that 'the medical documentation exercise which is in progress is a very comprehensive exercise to cover all requirements ..... after completion of the exercise, details relating to incidence of morbidity, extent of injury etc. will become clear'. It is unfortunate and frustrating that the Government, through this statement, now admits that it does not have an assessment of the morbidity status after a passage of more than three years. This admission, in effect, belies all the earlier proclamations made by the Government through its expensive mass media campaigns that everything was under control and being taken care of, while all this time the Government did not know what 'everything' was all about. Several journalists, closely observing the Bhopal scene, were not merely rhetorical when they remarked that lakhs of gas victims and the people of India as well, have been taken for a ride by the Government. Even this declaration of a belated 'head-count' does not seem to hold much promise for the reasons given below:-

(a) Only about 50% of the claimants served notice for their medical documentation have actually responded by

presenting themselves in the examination centres (cf. Government affidavit). Loss of gas victims' confidence in Governmental exercises is acknowledged as the most likely cause of this low response.

(b) In a majority of cases, only a few of the medical parameters are investigated and recorded. According to the interviews of gas victims conducted by the Minority Members and other voluntary workers, pulmonary function tests and exercise tolerance tests were frequently not conducted.

(c) The IR has already pointed out how the urine thiocyanate data were being recorded and interpreted erroneously [cf. Section 7.2.4 (vii) of IR].

(d) The exercise was started two years after the gas leak and is, therefore, apt to underestimate the morbidity status of the victims who may have partially recovered.

(e) The victims who now may have more or less recovered due to passage of time but suffered a lot before they were called for medical documentation, would have no way of recording the extent of injury to their health.

(f) Psychiatric afflictions are not likely to be recorded in this exercise since the Government affidavit states that 'Psychiatrists are not (emphasis ours) available to carry out examination of mental symptoms in the manner envisaged in the medical documentation exercise'.

### 3.16 Failure to Mobilise Private Doctors in a Common Endeavour

From the very beginning, the private doctors in Bhopal played a major role in the treatment of the victims. The victims sought their services in large numbers. It was imperative, therefore, that the Government systematically share all medical information regarding the victims with them and organise orientation courses and workshops in order to build up a scientific

consensus on the line of treatment. Except for stray and ill-sustained attempts at holding meetings with much fanfare with the private doctors, there is not much evidence of seeking to evolve a common programme of action. Consequently, lacking the benefit of integrated medical experience, a majority of the private doctors indulged without check in irrational and unsafe practices that may have done unmeasured harm to the victims. The private doctors also did not administer sodium thiosulphate injections even after the Government had, at least formally, accepted the ICMR recommendations in this respect. The Majority Members have erroneously stated in their one and a half-page interim report that 'the government made every effort to provide adequate supply of Sodium Thiosulphate to.....even private practitioners through the Indian Medical Association' (cf. Section 9.2 and Annexure No. 48 of IR).

### 3.17 Denial of Information

The IR has documented in detail how both the State and Central Government agencies practised a policy of suppression of vitally important scientific information to the detriment of the cause of medical relief and rehabilitation of gas victims (cf. Section 6.14 and Table I of IR). Inexplicably, the practitioners of this policy, including the Gas Relief Commissioner and ICMR Director General, went to the extent of denying information even to the Supreme Court Committee and its members (cf. our communication dated February 11, 1988 and Table I of IR). As shown in the IR, denial of information not only prevented open scrutiny of survey and research data necessary for identifying flaws and for maintaining scientific rigour, but also led to alienation of a large number of official and non-official scientific personnel from the Bhopal effort. Besides, this helped Union Carbide to practice its own policy of suppression of scientific information.

### 3.18 Economic Rehabilitation

According to reports available, a majority of the persons

trained by the Government in various vocations could not get gainful employment. The number of persons trained by the Government (a maximum of 4,300 according to the aforesaid Government affidavit) was in anyway so small that it could have hardly made any difference to the massive need of the people even if employment was made available to these 'fortunate' few. According to the Government affidavit, the much-acclaimed programme of providing employment to women has benefitted no more than 2,200 persons. Of these too, a majority have managed to earn only about Rs. 250/- per month as contractual wages due to limited market harnessed by the rehabilitation agencies for the goods manufactured by these women. It is also reported that the Banks have sanctioned STEP-UP loans to about 17,000 persons, with 25% of the amount being provided as Government subsidy. The Government has, however, never disclosed how many of these persons have been able to set up viable businesses with the loans.

### 3.19 Criteria of Success of Government Effort

It is clear from the Government affidavit as well as numerous officially sponsored media campaigns that the Government regards its success in terms of the quantum of public funds disbursed or spent, number of hospitals/clinics constructed, number of worksheds inaugurated, or the number of sophisticated medical instruments imported. Nowhere there is evidence that the Government agencies have tried to evaluate their performance in terms of the number of people cured or properly rehabilitated, manner in which the loans were utilised, or the quality of data generated through its surveys and research projects. It must have been an extension of this trend when the Chief Medical Officer (Gas Relief) misled the Supreme Court Committee for several months by submitting data on the number of 'beneficiaries' of thiosulphate therapy (those who received a course of six injections), in response to Committee's request to provide information on the number of persons who benefitted symptomatically (cf. Section 8.1.3 and the footnote on p.177 of IR).

#### 4.0 FORMULATION OF ISSUES AND TASKS

We would now identify the central issues and tasks in the context of the terms of reference before the Committee on the basis of the account of the state of medical relief and rehabilitation given in the preceding Section.

##### Terms of Reference

4.1 Carrying out proper epidemiological survey and also house-to-house survey of the gas affected victims for the purpose of determining the compensation payable to the gas affected victims and their families; to draw up a scheme for carrying out survey.

##### Issues & Tasks

###### Revising Mortality Figures:

i) Conduct a special probe into the issue of number of deaths in the days immediately following the gas leak, with special reference to the allegations of illegal disposal of dead bodies, in order to arrive at a more reliable estimate of mortality due to gas leak; take into account the number of missing persons as indicated in the TISS (Bombay) survey as well as the increased rate of deaths in the gas-exposed area during the period since the gas leak for the purpose of re-computing the mortality figures; also take into account the increased rate of spontaneous abortion and still births for this exercise; make proper arrangements for conducting post-mortem investigation for victims dying during the chronic phase in order to establish the cause of death for the purpose of inclusion in the mortality list. The recomputed mortality figures for different gas-exposed localities resulting from this exercise may be taken into consideration for designing of the epidemiological survey (see below).

Terms of Reference

Issues & Tasks

4.1 (contd.)

ii) Conducting Gas Plume Dispersion Study:

Conduct a gas plume dispersion study to determine probable air-borne levels of toxic materials in the environment of Bhopal at varying distances and directions from the factory (i.e. Isopleth Curves), following the gas leak on the intermittent night of December 2-3, 1984. This study would provide a useful basis for preparing a statistical design for an epidemiological study of the gas-exposed population (see below). Expertise for this purpose is available in the country.

iii) Conducting a Fresh Epidemiology Study:

Conduct a well-designed epidemiological study of the gas-exposed population of Bhopal with the purpose of --

- (a) determining the relationship between gas-exposure and morbidity/mortality;
- (b) determining the nature and extent of morbidity and mortality in different gas-exposed localities;
- (c) evolving a criterion for identifying gas victims and gas-exposed localities;
- (d) categorising gas victims and gas-exposed localities with respect to the degree of exposure or affliction;
- (e) building up a basis for assessing and measuring medical disability;

Terms of Reference

Issues & Tasks

4.1 (contd.)

- (f) assessing the nature and extent of the damage caused to the reproductive health of the gas-exposed population, with special reference to women's health;
- (g) ascertain the nature and extent of damage to the health of two special age groups, viz. children and old people, and
- (h) determining the nature and extent of mental health disorders and emotional loss caused by gas-exposure.

The role of epidemiological data in planning medical relief, rehabilitation and disbursement of compensation has already been discussed in Section 3.14 of this report.

iv) Reorganising Medical Documentation

Exercise:

Reorganise the medical documentation exercise, being jointly conducted by the Gas Relief Commissioner and Directorate of Claims of the Government of M.P., along scientific lines, ensuring that

- a) all claimants are included,
- b) all proposed medical parameters are reliably investigated and recorded for each claimant,
- c) a complete copy of the medical documentation is furnished to each claimant,
- d) the exercise is completed according to a time-bound schedule,

Terms of Reference

Issues & Tasks

4.1 (contd.)

- e) assessment of the damage caused to the reproductive health in general and women's health in particular, is included,
- f) special problems of health damage in case of children and old people are included,
- g) arrangements for assessing mental health disorders and emotional loss are made,
- h) the urine thiocyanate data are analysed and assessed in a population-based perspective, as recommended in Section 10.19 of IR ; further, these data are correlated with the results obtained from retrospective analysis of urine thiocyanate data, compiled by the Medico-Legal Institute (Bhopal) and various ICMR research projects in the first two years following the gas leak (cf. recommendation in Section 10.9 of IR), and
- i) a system for supervising and monitoring this exercise and for inquiring into complaints and suggestions is set up with the help of representatives of voluntary bodies and gas victims' organisations.

v) Quantifying Personal Injury:

Organise a special study to evolve a quantitative index for assessment of 'Personal Injury' and make provision for determining

Terms of Reference

Issues & Tasks

4.1 (contd.)

this for each claimant in the above-named medical documentation exercise.

vi) Reprocessing Earlier Surveys:

Reprocess data from all earlier surveys conducted in the gas-exposed areas, including the TISS survey, with the purpose of correlating the results with those of the epidemiological study and medical documentation exercise, in order to take into account the available information on morbidity and mortality during the first two years following the gas leak.

4.2 Ensuring proper medical facilities to the gas affected victims; to give directions from time to time for carrying out survey and providing medical relief;

AND

To draw up a scheme for provision of medical relief and for monitoring the implementation of the scheme.

i) Reorganising Line of Treatment:

a) Obtain information about the probable chemical composition of toxic emission and toxicology of MIC and all products of its exothermic reaction and thermal decomposition from Union Carbide Corporation (USA) and Union Carbide India Ltd. (cf. recommendation in Section 10.12 of IR).

b) Obtain a copy of the medical information procured by the State or Central Government agencies from Union Carbide Corporation and Union Carbide India Ltd.

c) Obtain all toxicological information about MIC and products of its exothermic reaction and thermal decomposition available with various official and semi-official agencies in USA, including the National Toxicology Program (NIEHS,

Terms of Reference

4.2 (contd.)

Issues & Tasks

Research Triangle Park, N.C.), Occupational Health and Safety Administration (Department of Labour), Environmental Protection Agency, American Conference of Governmental Industrial Hygienists, American Society of Toxicologists, and National Institutes of Health.

d) Obtain toxicological information on MIC from International Isocyanates Associates Inc. (New York).

e) Obtain results of latest toxicological research on MIC by leading US-based investigators, including Professors Meryl H. Karol and Yves Alarie (University of Pittsburg, PA), Prof. Henry Falk (Centre for Disease Control, Atlanta, Georgia) and Prof. William E. Brown (Carnegie-Mellon University, Pittsburgh, PA).

f) Obtain relevant references from computer-search of world-wide databases on the researches conducted on the toxicology of MIC and related poisonous chemicals, by the National Aeronautical Laboratory (Bangalore) and published in February-March 1985.

g) Obtain copies of all reports submitted by the Scientific Commission on Bhopal to the Government of India regarding the health status of the gas victims and effect of MIC on human body and other life systems.

Terms of Reference

Issues & Tasks

4.2 (contd.)

h) Obtain latest report of all research projects conducted in the context of Bhopal gas disaster under the sponsorship or control of CSIR, ICMR, ICAR, DRDE (Gwalior), IVRI (Izzatnagar, U.P.), Central Board for the Prevention and Control of Water Pollution (New Delhi), Medico-Legal Institute (Bhopal), Gandhi Medical College (Bhopal), All India Institute of Medical Sciences (New Delhi), K.E.M. Hospital (Bombay), K.G. Medical College (Lucknow), NIMHANS (Bangalore), Patel Chest Institute (Univ. of Delhi, Delhi), National Institute of Oceanography (Goa), NIOH (Ahmedabad), Department of Botany at Jivaji Rao University (Gwalior), National Centre for Advanced Research in Atmospheric and Allied Studies (I.I.T., New Delhi), Centre for Studies in Social Medicine & Community Health at Jawaharlal Nehru University (New Delhi) & others.

i) Obtain reports of medical studies and health surveys of gas victims conducted by voluntary organisations, including Medico Friend Circle, Jana Swasthya Kendra, Jana Swasthya Kendra (Bhopal), Nagarik Rahat aur Punarvas Committee, Bhopal Eye Hospital, Indian Red Cross Society (Bhopal Unit), AGAPE, Students Federation of India (M.P. Unit), M.P. Vigyan Sabha (Bhopal), Delhi Science Forum and Jaslok Hospital (Bombay).

Terms of Reference

4.2 (contd.)

Issues & Tasks

- j) Carry out investigations on urine thiocyanate levels of statistically selected sample population groups from exposed and unexposed areas and also case-controlled Double Blind Clinical Trials on the continuing efficacy of sodium thiosulphate therapy, as recommended in Sections 10.1 to 10.4 of IR.
- k) Analyse and integrate the information obtained from (a) to (j) above in order to gain an understanding of the toxicological basis of ailments and deaths caused by the gas leak. With this insight, efforts may be made to formulate an effective strategy of detoxification, prevention of further toxic damage and other modalities of treatment.
- l) Rationalise the practice of symptomatic drug therapy, with particular reference to steroids and antibiotics, and take measures to stop the use of unscientific drugs in Bhopal.
- m) Make arrangements for providing effective psychiatric support to the gas victims, as recommended by experts from NIMHANS (Bangalore) and K.G. Medical College (Lucknow).
- n) Evolve a scientific criterion for distinguishing between tuberculosis and lung injury caused by gas-exposure.

Terms of Reference

4.2 (contd.)

Issues & Tasks

ii) Ensuring Adequate Nutrition:

Take all necessary measures to ensure that gas victims, irrespective of their income levels, have access to adequate nutrition during the period of their recovery. Admittedly, this depends on either economic rehabilitation of the victims or provision of free supply of food. Attention has already been drawn in Section 3.12 to the fact of premature withdrawal of free supply of food and also to the failure of the Government to economically rehabilitate the gas victims. No doubt, this has caused tremendous hardships to the victims, a majority of whom fall in the low-income group, and adversely affected the process of their recovery. However, the manner in which access to adequate nutrition can be ensured is a matter that is beyond the purview of this Committee's terms of reference. The decision in this respect can best be made by the appropriate authorities in consultation with gas victims' organisations, as long as the measures proposed by them will ensure access to adequate nutrition to all of the gas victims without any further delay.

iii) Organising Medical Rehabilitation:

Conduct specific studies to determine the working conditions in different sectors of employment in Bhopal and prepare a sector-wise plan for vocational rehabilitation in accordance with the reduced

Terms of Reference

4.2 (contd.)

Issues & Tasks

working capacity and other medical disabilities of the gas victims. In the case of women engaged in domestic work, a study of their occupational environment with respect to source of water and fuel and problems of irritability to smoke, dust and other pollutants in their environment, would be imperative. Similarly, problems related to mental health disorders, other medical disabilities and emotional loss are likely to pose special problems of social adjustment in the case of children and old people. A complete programme of medical rehabilitation would thus have the following components:

- a) Physiotherapy, mostly respiratory,
- b) Occupational therapy, with emphasis on women engaged in domestic work,
- c) Vocational rehabilitation, according to a sector-wise plan of employment in accordance with reduced working capacity and other medical disabilities, and
- d) Social rehabilitation, with emphasis on problems of adjustment of children and old people.

iv) Rationalising Medical Facilities and Infrastructure:

Obtain a copy of the report prepared by the Heerji Committee, sent to Bhopal by the Prime Minister in August 1985, which made a critical study of the available medical facilities in Bhopal; suggestions

Terms of Reference

4.2 (contd.)

Issues & Tasks

made in that report have not yet been taken into account. Procure detailed information on the number and type of health personnel deployed in different Government hospitals/clinics, availability of clinical and investigative facilities and other infrastructural arrangements. On the basis of the information thus compiled, prepare a community-based plan of medical service wherein teams of health personnel are made responsible for the entire medical care and rehabilitation of a pre-determined number of patients, investigative and treatment facilities are made easily accessible to the patients in a decentralised manner and community-based health workers play a critical role. The rational basis of such a plan would emerge from the epidemiological data. It is also imperative that an effective co-ordination is established with the private and voluntary doctors, through systematic exchange of medical information and orientation programmes.

v) Monitoring:

The first step in instituting an effective programme of monitoring in Bhopal would be standardisation of systems of recording medical information about the patients. A recommendation in the context of sodium thiosulphate therapy has been made in Section 10.4.1 of IR. Detailed planning

Terms of Reference

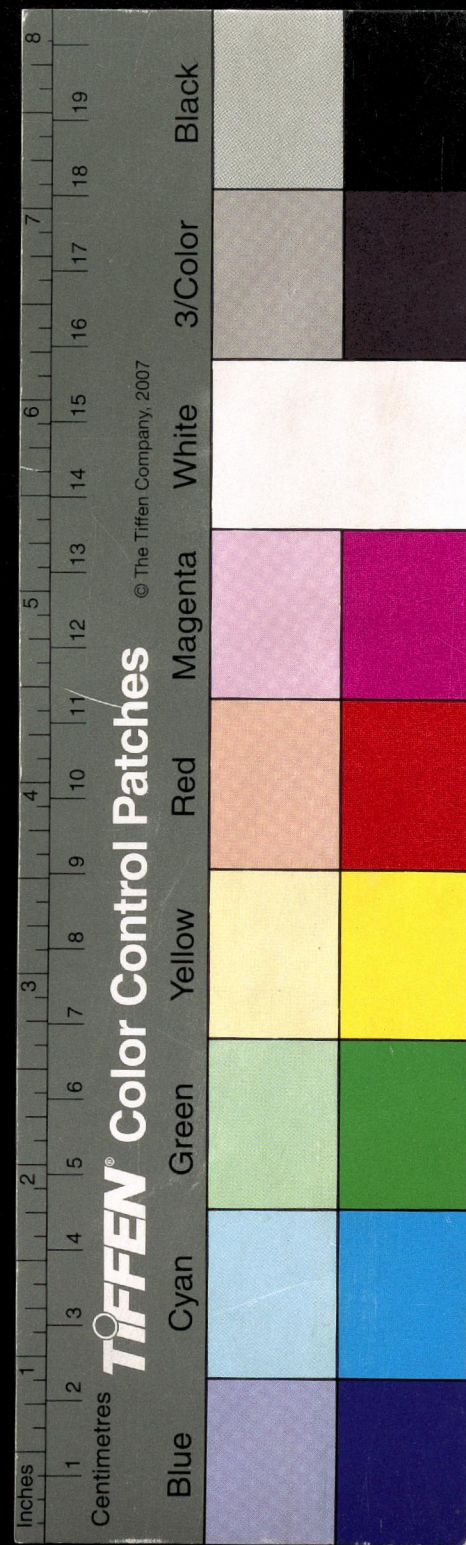
4.2 (contd.)

Issues & Tasks

of recording system along similar lines for various other aspects cf. medical relief and rehabilitation is overdue. A practice of issuing health cards and providing copies of all medical records to the patients is yet to become acceptable. A scheme for both short-term and long-term surveillance would have to be worked out for specific objectives, which may include pulmonary function tests, exercise tolerance test, ophthalmological investigation, urine thiocyanate estimation, psychometry, assessment of immune response, gynaecological examination, and detection of carcinogenic and mutagenic effects.

vi) Dissemination of Information:

It is imperative that the State and Central Government agencies are made to reverse their policy of practicing suppression of vital medical information. The IR has provided ample evidence of a relationship between people's Right to Information and Right to Life (cf. Section 6.14 of IR). Dissemination of scientific information and a culture of encouraging open scrutiny of research data would also go a long way in ensuring both scientific rigour and maintenance of medically relevant direction in Bhopal research. The IR has also demonstrated that systematic sharing of scientific information will play a positive role in combating spurious and misleading medical information



Terms of Reference

4.2 (contd.)

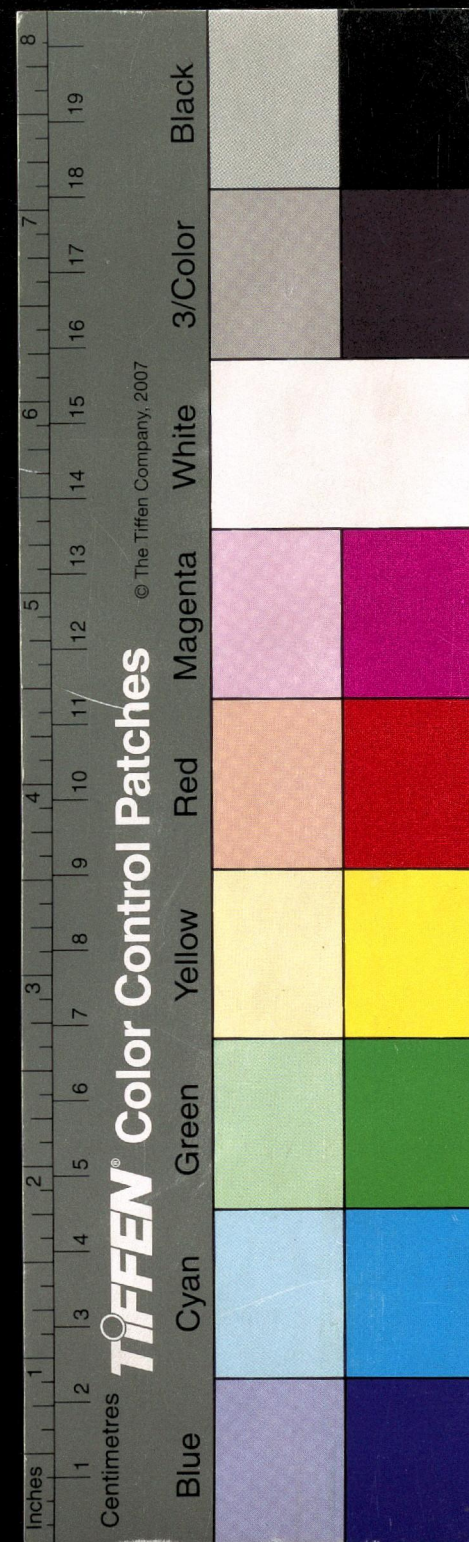
Issues & Tasks

disseminated by Union Carbide.

vii) Reorganising Research Programme:

The IR has recommended that the entire medical research programme be reorganised in a toxicological perspective, along lines of investigation indicated therein (cf. Section 7.7 and 10.13 of IR). The purpose of this reorganisation would be to achieve an understanding of the physio-pathological basis of multi-systemic toxic effects and to develop an effective programme of antidotal therapy or prevention of further long-term damage. The IR has also shown that the lacunae of the research programme on gas victims were not due to lack of scientific competence or resources in the country, but were a result of abysmally poor administration of research networks. The performance of these networks further suffered from a lack of commitment to the cause of the gas victims as well as to science. The situation clearly calls for a separate national body which is not fettered by Governmental culture and influence, and would not hesitate to draw upon the scientific competence and resources available in the country.

4.3 To give directions i) The reports of studies and surveys, as to produce before it yet not available to the public, which the results of the are required for the purpose of reorganising surveys which have already been done in have already been referred to in



Terms of Reference

4.3 (contd.)  
order to ascertain  
what further work  
remains to be done.

Issues & Tasks

Sections 4.1. and 4.2. Of these, certain reports/materials as listed in Annexure II are urgently needed in order to

- a) formulate immediate measures for improving medical relief and rehabilitation programmes which are currently in operation.
- b) evolve a basis for evaluating the toxicological information to be submitted by Union Carbide, and
- c) acquaint the Supreme Court with the problems of health and medical rehabilitation still faced by the gas victims.

ii) The work which still remains to be done has been identified and detailed in Sections 4.1 and 4.2 of this report.

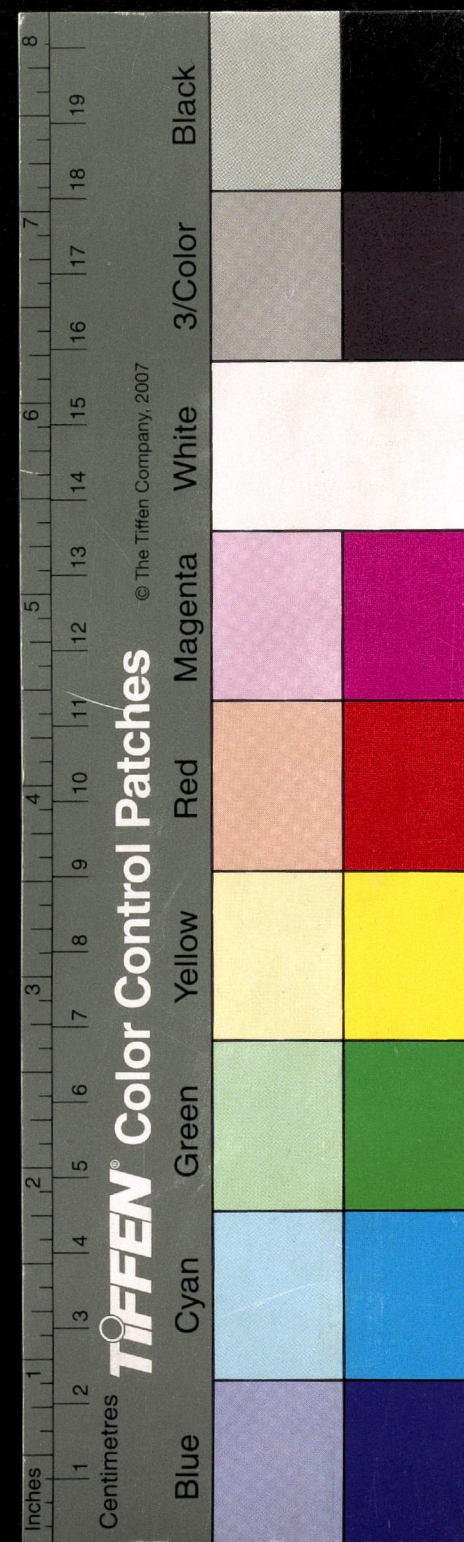
5.0 WHAT IS TO BE DONE ?

It is clear from the account of the state of medical relief, rehabilitation and research given in the IR and Section 3.0 of this report that the gas victims have suffered untold hardships as a result of Union Carbide's machinations and inhuman conduct. The sufferings of the gas victims have been further compounded by the indifferent and unscientific handling of the problems of medical relief and rehabilitation by the Government authorities and research agencies. The experience also makes it transparent that the State and Central Government bodies failed not only in the implementation of plans but also in correctly identifying issues and tasks. The authority vested in these bodies and the huge resources available to them could not ensure that the cause of the gas victims would be viewed with concern and served expeditiously. What is obviously required here is formation of a special body which could be composed of people having expertise,



commitment and independence of mind. Once a body of such people is vested with appropriate authority and provided with the necessary infrastructural support, one may legitimately expect that this body would act unfettered by the stifling influence of bureaucratic culture, and not hesitate to mobilise the widely available professional talent in both official and non-official sectors in the country. The experience documented in the IR and elsewhere further provides a basis to expect that such a body would be able to effectively combat the influence of vested interests, be it of the Union Carbide lobby or of the Government and its bureaucracy. This then leads us to the need to constitute such a body to be named as National Medical and Rehabilitation Commission for Bhopal Gas Victims, that would be entrusted with all the tasks enumerated in Section 4.0. Besides, it seems appropriate at this stage that the various tasks proposed earlier in the IR for specially constituted independent bodies and/or the Scientific Commission on Bhopal, may now be integrated into the domain of the proposed Commission and thus make overall coordination possible (cf. recommendations in Sections 10.7, 10.13 and 10.15 of IR).

Undoubtedly, the major responsibility for implementing the medical relief and rehabilitation programme must continue to lie with official agencies and the participation of their representatives in the proposed Commission would be imperative. What is sought to be introduced in the Bhopal scene through this proposal is a body that would stand out as a source of leadership and expression of national will in the quagmire of chaos, indifference and directionlessness. The Commission would be expected to represent people's interests in Bhopal and, at the same time, be accountable to the highest judicial body of the land to safeguard gas victims' Right to Life and ensure social justice. The question of precedence, legal or otherwise, has no relevance here, for, the Bhopal Gas Disaster itself is without precedent



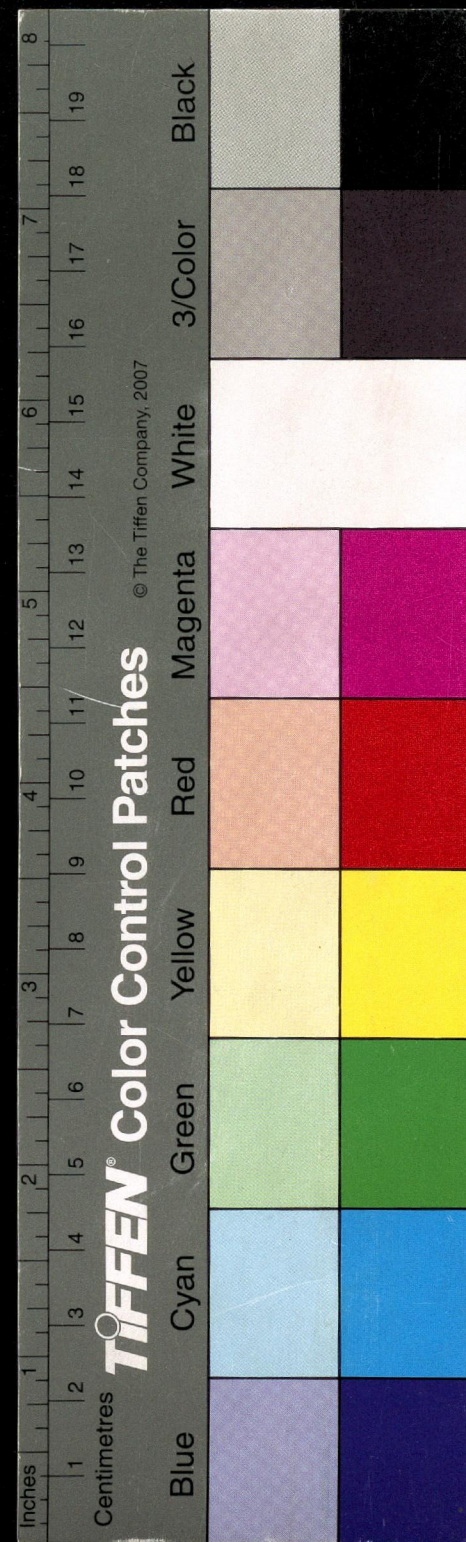
in world history. The plight of the survivors of the Bhopal tragedy calls for imagination, innovation and boldness. Human experience has taught us that challenges like Bhopal themselves create precedents.

#### 6.0 HOW IS IT TO BE DONE ?

The proposed National Medical and Rehabilitation Commission for Bhopal Gas Victims may be constituted by the Supreme Court of India and be made accountable to the Court itself. It may be chaired by a former/sitting Judge of the Supreme Court and be composed of carefully selected scientists, doctors, rehabilitation experts, social workers of national credibility, and members of voluntary organisations with known record of service and scientific work in the cause of the Bhopal victims. Representatives of selected State and Central Government agencies concerned with tasks in Bhopal may also be enlisted in the Commission. A possible list of such members is proposed in Annexure III of this report. Provision would have to be made to enable the Commission to form sub-committees for specific tasks and associate or co-opt expertise from any part of the country for this purpose. The Government of India would be the most appropriate source for providing resources and infrastructural support for effective and long-term functioning of the Commission. The Commission may be vested with the necessary authority and status to enable it to perform a policy-making role with respect to various aspects of medical relief and rehabilitation, and function as a supervisory, monitoring and co-ordinating body over all State and Central Government agencies engaged in this task.

#### 7.0 RECOMMENDATIONS

7.1 It is recommended that a body named as National Medical and Rehabilitation Commission for Bhopal Gas Victims be constituted under the chair-personship of a former or sitting Judge



of the Supreme Court of India and entrusted to carry out all tasks that **have** been enumerated in Section 4.0 of this report and also any other tasks it may find necessary or appropriate to ensure proper medical relief and rehabilitation of the Bhopal victims. The Commission may be composed of persons of known expertise, commitment, credibility or scientific contribution to the cause of relief and rehabilitation in Bhopal, besides enlisting representatives of official agencies as well (cf. Sections 5.0 & 6.0 of this report for more details and Annexure III for a possible list). The Commission may be vested with the necessary authority and provided with resources and infra-structural support so that it may effectively perform policy-making, supervisory, monitoring and co-ordinating functions, as suggested in Section 6.0.

7.2 The National Medical and Rehabilitation Commission for Bhopal Gas Victims may be called upon to pay special attention to the following:

- i) Medical Rehabilitation of the handicapped gas victims through physiotherapy (mostly respiratory), occupational therapy with emphasis on women engaged in domestic work, vocational rehabilitation according to a sector-wise plan of employment, and social rehabilitation giving priority to psychiatric support for adjustment problems of children and old people, as suggested in Section 4.2 (iii),
- ii) Community-based approach to medical relief, as suggested in Section 4.2 (iv).
- iii) Toxicological perspective in reorganising medical research in order to evolve an effective strategy of detoxification and prevent further long-term health damage, as suggested in Section 4.2 (i),



iv) Proper medical record-keeping and dissemination of medical information to ensure monitoring, as suggested in Section 4.2 (v) & (vi), and

v) Scientifically conducted epidemiological study and medical documentation exercise and review of mortality figures, as suggested in Section 4.1 (i), (iii) & (iv), in order to lay down a reliable basis for planning medical relief, rehabilitation and compensation.

7.3 The National Medical and Rehabilitation Commission for Bhopal Gas Victims may be called upon to take into account the findings and recommendations of the Minority Interim and Final Reports in its work.

7.4 The reports/materials as listed in Annexure II may be urgently procured for the purposes enumerated in Section 4.3.

*Anil Sadgopal*  
( ANIL SADGOPAL )

*Sujit K. Das*  
( SUJIT K. DAS )

New Delhi  
August 30, 1988



ANNEXURE I  
( two pages )

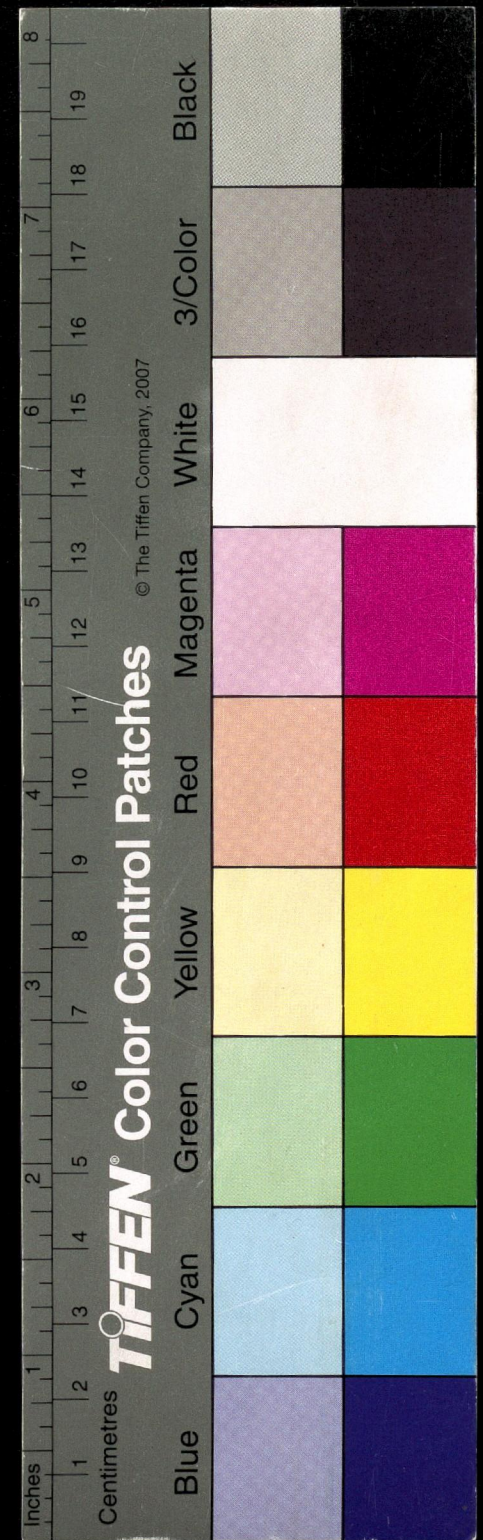
MINUTES OF THE SUPREME COURT COMMITTEE MEETING HELD ON  
13TH AND 14TH OF DECEMBER 1986, AT ICMR HEADQUARTERS  
AT NEW DELHI

The Committee discussed the suggestion of Dr. Sujit K. Das that the original terms of reference of the Supreme Court should be carefully re-examined.

After considerable discussion it was felt that :

1. As regards the first terms of reference viz., "carrying out fair distribution of Sodium Thiosulphate (i.e. administration), the Committee has been unable to agree upon a unanimous "interim report", and, therefore, majority and minority (i.e. Dr. Anil Sadgopal and Sujit K. Das) reports are being submitted to the Supreme Court.
2. As regards all other terms of reference in the Supreme Court order dated 4.11.85, the Committee considered the following alternative courses of action for future:
  - i. The Committee should be in a position to identify the appropriate agency or experts who would be in a position to undertake the detailed examination of each of the other issues.
  - ii. The Committee should look into all issues in the directives of the Supreme Court, evaluate the stage of knowledge and its adequacy for the purposes as defined in the Supreme Court order. Wherever necessary the Committee should seek consultation and help from other experts to make this evaluation. Based on such assessment, the Committee may give the necessary recommendations to the Supreme Court.

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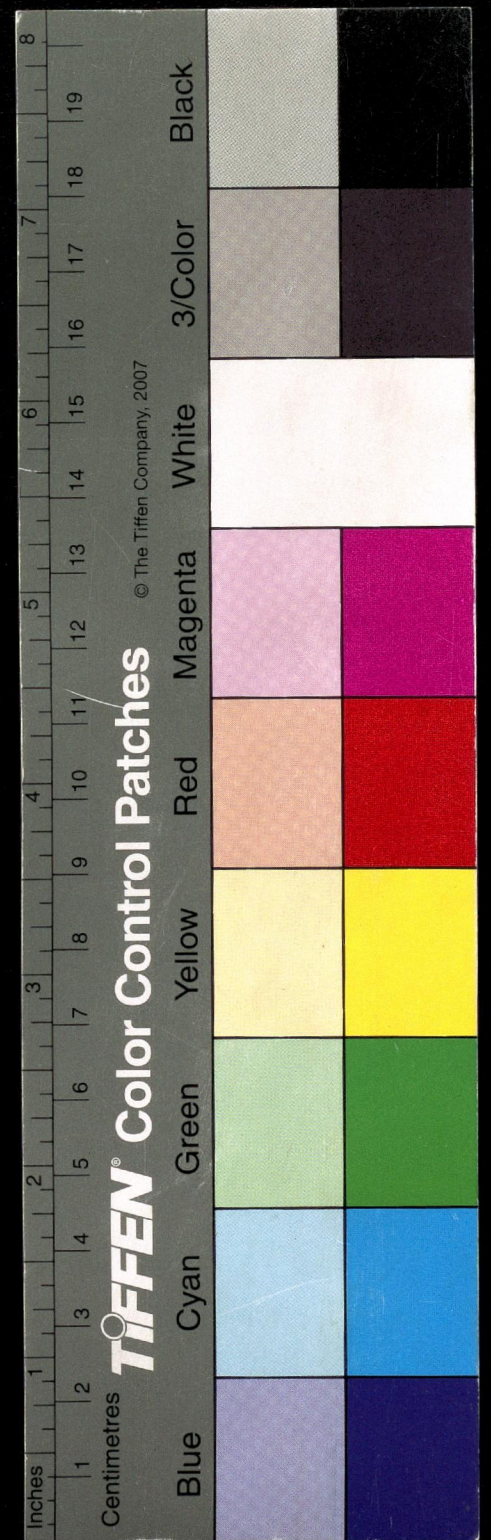
ANNEXURE I (contd.)

- iii. The Committee should identify, designate and inform the Supreme Court that such activities are already being undertaken by appropriate Government machinery for the purpose.
- iv. The Committee would not be in a position to undertake their responsibility in accordance with the expectations of the Supreme Court directives and would like to request that the same responsibility may be entrusted to such other Committee/Experts who may be in a better position to fulfil the desired tasks entrusted by the Supreme Court.

Dr. Anil Sadgopal and Dr. Sujit K. Das indicated their preference for the second course of action, while Dr. S. Sriramachari, Dr. M.P. Dwivedi and prof. Dr. Heeresh Chandra indicated their preference for the fourth course of action. The Government representatives - Dr. A.K. Handa and Dr. O.P. Sharma informed that they shall abide by the Committee's decisions.

Finally, it was decided that in view of a lack of unanimity regarding future course of action, the Committee wished to convey this situation to the Supreme Court for necessary advice. Till then the Committee shall continue to function.

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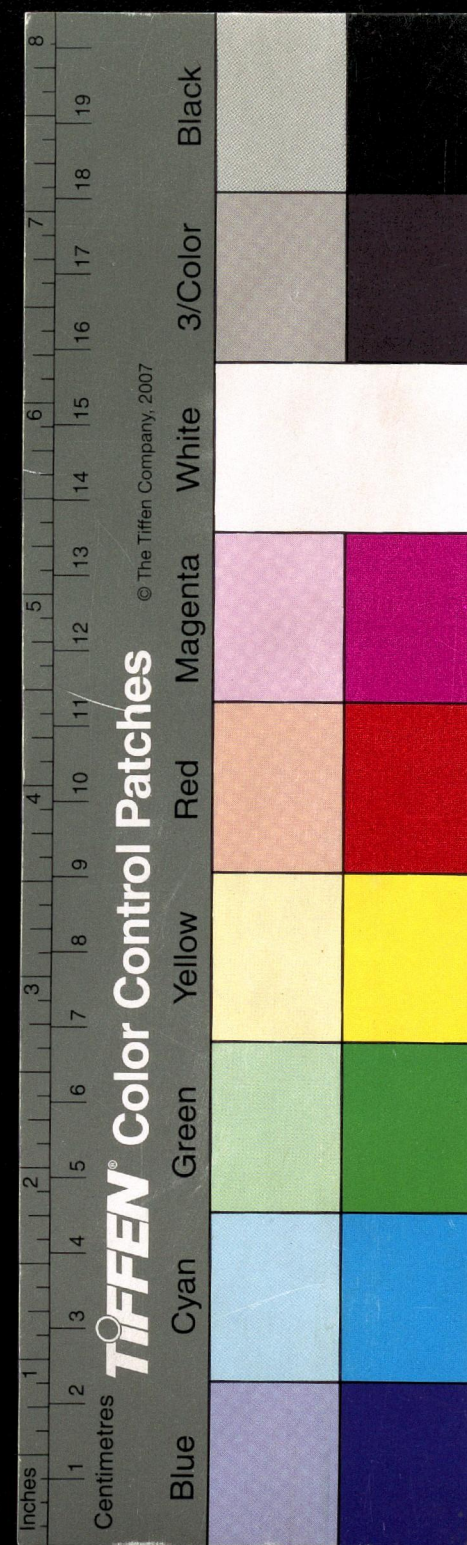


ANNEXURE II  
(2 pages)

LIST OF REPORTS/MATERIALS TO BE PROCURED FROM RESPECTIVE  
AGENCIES OF GOVERNMENT OF M.P. OR GOVERNMENT OF INDIA

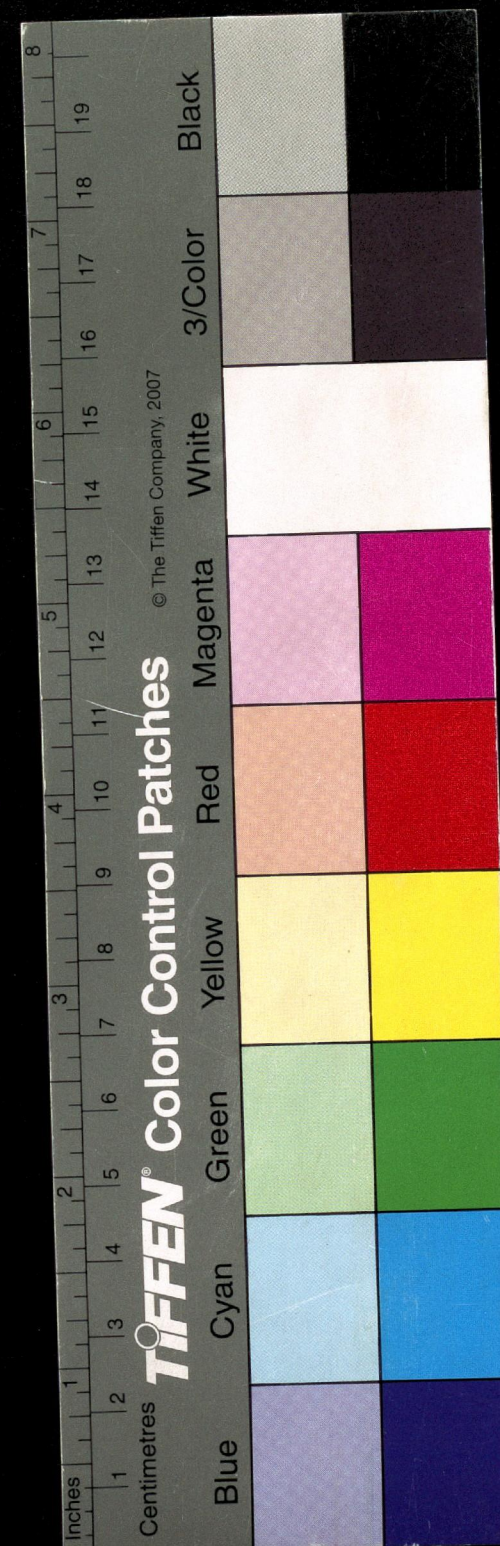
(cf. Sections 4.3 and 7.4)

1. Report of the surveys conducted by the Tata Institute of Social Sciences and other agencies in the first half of 1985 under the aegis of the Government of M.P.
2. Report submitted by Heerji Committee to the Prime Minister in August-September 1985.
3. Report submitted by the Scientific Commission on Bhopal, chaired by Dr. C.R. Krishnamurthi, to the Government of India on the effects of the toxic emission on the human body and other life systems.
4. Report prepared by the Central Board for the Prevention and Control of Water Pollution (New Delhi) on the analysis of air samples collected on December 5-6, 1984, from within and outside the Union Carbide plant in Bhopal.
5. Report of the study on gas plume dispersion following Bhopal gas leak prepared by the National Centre for Advanced Research in Atmospheric and Allied Sciences (I.I.T., New Delhi).
6. Scientific information claimed to have been submitted by Union Carbide Corporation to the Government of Madhya Pradesh.
7. Hindi video film (Director - Muzaffar Ali) on the Bhopal gas tragedy, sponsored by the Department of Publicity, Government of M.P., but later not released for public viewing, containing an interview of a resident of J.P. Nagar narrating how dead bodies were being illegally disposed of on the day following the gas leak.



ANNEXURE II (contd.)

8. Latest research reports of all ICMR research projects on the Bhopal gas leak.
  9. Minutes of all ICMR meetings held in the context of Bhopal gas disaster.
  10. Report of the Pregnancy Outcome Survey conducted by ICMR.
  11. Report of the corrective measures taken by ICMR on the epidemiology study on the Bhopal gas victims, in response to the critiques submitted by the Minority Members to the Supreme Court Committee (cf. Table I, Item 6 and Annexure No. 20 of IR), and a copy of the improved epidemiology survey report.
  12. Report of the survey conducted by ICMR's Bhopal Gas Disaster Research Centre on the experience of the gas victims with respect to sodium thiosulphate therapy.
  13. Summary of the scientific information gained from the medical documentation exercise being jointly conducted by the Directorate of Claims and Gas Relief Commissioner of the Government of M.P.
  14. Report prepared by the Indian Agricultural Research Institute (ICAR, New Delhi) on the effects of the toxic emission on the flora of Bhopal.
  15. Report prepared by ICAR's Indian Veterinary Research Institute (Izzatnagar, U.P.) on the effects of the toxic emission on the cattle and fauna of Bhopal.
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ANNEXURE III  
( 5 pages )

A POSSIBLE COMPOSITION OF THE PROPOSED  
NATIONAL MEDICAL AND REHABILITATION COMMISSION FOR BHOPAL GAS  
VICTIMS

<u>No.</u>	<u>Name</u>	<u>Designation/ Association</u>	<u>Speciality/ Bhopal Experience</u>
1.	Justice V.R. Krishna Iyer/Justice P.N. Bhagwati/a sitting Judge of the Supreme Court (Chairperson)	-	-
2.	Baba Amte	Founder of Maharogi Seva Samiti, Anandwan, Dist. Chandrapur, Maharashtra.	Social worker of national reknown; rehabilitation of leprosy patients; Magsaysay Award.
3.	Dr. P.K. Sethi	Former Professor & Head, Dept. of Orthopaedics, Govt. Medical College, Jaipur, Rajasthan.	Medical rehabilitation; Magsaysay Award.
4.	Dr. A.K. Biswas	Professor & Head, Dept. of Physical Medicine & Rheumatology, Calcutta National Medical College, Calcutta.	Medical rehabilitation.



ANNEXURE III (contd.)

<u>No.</u>	<u>Name</u>	<u>Designation/ Association</u>	<u>Speciality/ Bhopal Experience</u>
5.	Dr. Ajoy Mitra	Professor of Paediatrics, Institute of Post-graduate Medical Education & Research, Calcutta; President, Health Services Association, West Bengal.	Paediatrics; voluntary medical relief; people's health movement.
6.	Dr. Dinesh Mohan	Professor in Centre for Bio-medical Engineering, Indian Institute of Technology, New Delhi; holding State Bank Chair for Bio-medical Engineering & Rehabilitation.	Prevention, control and rehabilitation of accidental injury cases & other forms of medical disabilities; assessment of personal injury; experience of rehabilitation of anti-Sikh riot victims in Delhi as Governing Body member of Nagrik Ekta Manch; known for writings on Bhopal victims.

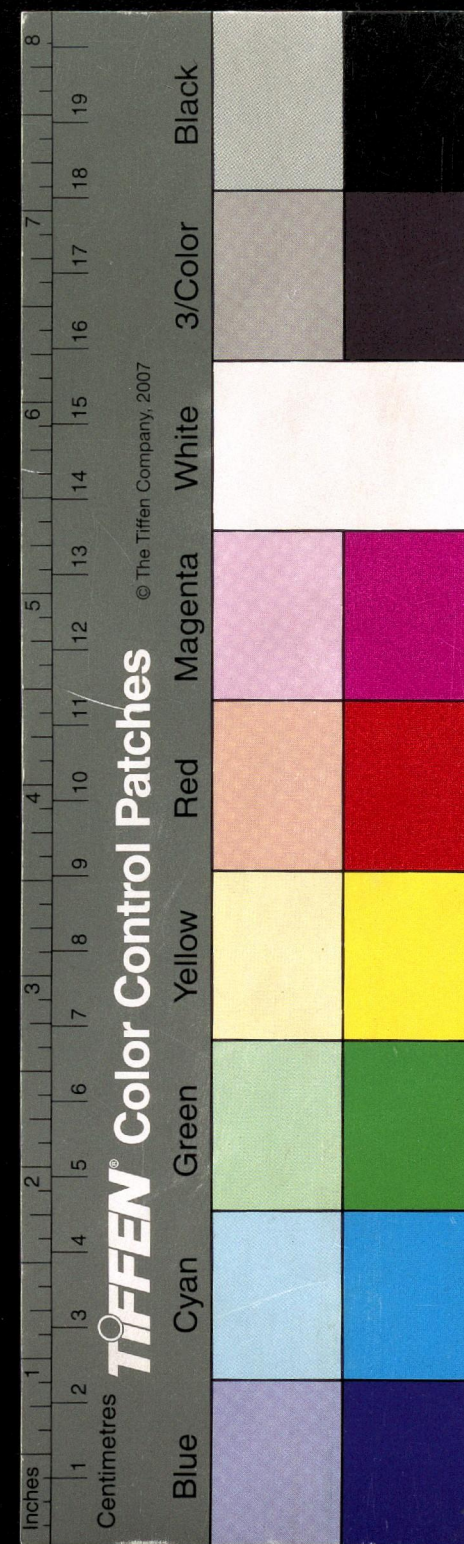
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ANNEXURE III (contd.)

No.	Name	Designation/ Association	Speciality/ Bhopal Experience
7.	Dr. Imrana Qadeer	Associate Professor, Centre for Study of Social Medicine & Community Health, Jawaharlal Nehru University, New Delhi.	Epidemiology and occupational health; planning & assessment of public health systems; trained as paediatrician; people's health movement.
8.	Dr. Anant Phadke	Lok Vidnyana Sanghathana, Pune, Maharashtra; All India Drug Action Network.	People's health movement; rational drug policy campaign; health journalism; treated Bhopal victims in 1985 as I/c, Jana Swasthya Kendra, Bhopal.
9.	Dr. C. Sathyamala	Editor, Medico Friend Circle Bulletin, New Delhi.	Co-ordinated a Pregnancy Outcome Study of gas-exposed women on behalf of Medico Friend Circle and participated in latter's epidemiology study in Bhopal in 1985.
10.	Dr. Thelma Narayan	Community Health Cell, Bangalore.	Epidemiology; participated in Medico Friend Circle's epidemiology study in Bhopal; authored

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ANNEXURE III (contd.)

No.	Name	Designation/ Association	Speciality/ Bhopal Experience
11.	Dr. B. Ekbal	Former President, Kerala Sastra Sahitya Parishat, Trivandrum; Professor of Neuro- surgery, Trivandrum Medical College, Kerala.	People's science movement & rational drug policy campaign; participated in workshops & campai- gns on medical relief of Bhopal victims.
12.	Shri Satinath Sarangi	Bhopal Group for Information & Action, Bhopal.	Full-time activist in Bhopal victims' organisations since the beginning of the Bhopal tragedy; health worker in Jana Swasthya Kendra from June 1985 on- wards and later manager of Jana Swas- thya Kendra (Bhopal) from October 1985 to January 1986; known for studies on relief & rehabi- litation problems of Bhopal victims; edited 'BHOPAL' bulletin. .....5



ANNEXURE III (contd.)

No.	Name	Designation/ Association	Speciality/ Bhopal Experience
13.	Shri Abdul Jabbar Khan	Convenor, Bhopal Gas Pedit Mahila Udyog Sangathan, Bhopal.	Himself a gas victim.
14.	Representative of Govt. of India	Preferably Secretary, Dept. of Chemicals/ Dept. of Health & Family Welfare.	-
15.	Representative of Govt. of M.P.	Preferably Gas Relief Commissioner from Bhopal.	-
16.	Representative of ICMR	Preferably Director General/Director, Bhopal Gas Disaster Research Centre.	-
17.	Representative of Gandhi Medical College, Bhopal	Preferably Dean	-

18.)  
19.)  
20.)

TO BE CO-OPTED LATER BY THE COMMISSION

