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Gujarat State is one of most industrialized states in India. The State was created in 1960, but industrialization of the region commenced in the second half of the 19th century with the establishment of a cotton textile mill at Bharuch followed by another at Ahmedabad. Later, Ahmedabad came to be known as the Manchester of India. Oil found in Gujarat in 1948 provided great impetus to industrial development;¹ principally along a strip stretching from Mehsana in the north to Vapi in the South (along the railway line to Mumbai) popularly known as the “Golden Corridor.” The number of working factories rose from 3,647 in 1960 to 10,611 in 1979-80² and over 31,000 in 2005-06. The Golden Corridor accounts for 70% of industries in the organized sector, 57.5% of small-scale units and 66% of all working factories.

Limestone, the main raw material for cement manufacture, is widely available in Gujarat. The coastal belt from Gopnath to Okha is rich in high grade limestone; the first cement plant was established in this belt at Porbandar in 1914. In 1948, Shree Digvijay Cement Co. Ltd. (named after an earlier ruler of Jamnagar State) established a cement manufacturing plant at Sikka in Jamnagar District. In 1963, the company opened another factory* at Ahmedabad to manufacture asbestos cement sheets. Digvijay Cement achieved a major breakthrough in 1975 when it more than doubled its exports to 137,000 tonnes from 54,000 tonnes the previous year. Its exports of asbestos products had also likewise increased, raising aggregate export earnings to over Rs.40 million (\$7.7 million).†

Another major industry where asbestos is widely used is power generation. Asbestos was and still is used as insulation for boilers and furnaces. The power plant in Ahmedabad known as the Ahmedabad Electricity Company was established in 1955. It was a State owned company till 1998 when it was sold to the Torrent group of companies.

Ship-breaking is a further source of asbestos exposure for Gujarat workers. In 1978, the Government of India recognized ship-breaking as an “industry” and the Ship Breaking Development Fund was created. Initially, a yard was established at Sachana near Jamnagar, but in 1982-83, Alang,

near Bhavanagar was selected to be developed as a major ship-breaking facility and by June 1983, 12 ships had arrived there for breaking.³ The number of ships increased year on year, reaching a peak in 2001 with more than 330 ships being processed.

Gujarat being a state where chemical, petrochemical, refinery, fertilizer, pharmaceutical, paint, rubber, plastic, dyes & pigments, pesticides, cement, soda ash, and ceramic manufacturing grew in a big way, generated a huge market for insulation and safety equipment. Asbestos gaskets, rope, gloves and blankets were always in high demand, with vendors either manufacturing these latter items on their own premises or outsourcing the sewing work.

Industrialization brought with it a large increase in the number of motor vehicles manufactured in Gujarat. This created a huge demand for asbestos brake linings, largely satisfied by small entrepreneurs manufacturing these and other auto parts – another source of asbestos exposure.

In 1990, I was part of a team making a film on the status of Occupational Health and Safety (OHS) in Gujarat. Interviewing the Chief Inspector of Factories, I was told, off the record of course, that he thought that the workers in Gujarat were immune to asbestos. “Had it not been so, large numbers of workers in Gujarat would have died of asbestos looking at the poor work conditions in Gujarat,” he added. If a senior officer, responsible for protecting workers health had such beliefs, what could be expected of OHS in Gujarat?

Government Concern for Asbestos Hazards

The Government of India resolved in 1981 to constitute a panel on the asbestos products industry. During the 6th meeting of this panel held at Madras (now known as Chennai) the Ministry of Environment and Forests (MoEF) was requested to set up a committee to study “Health Hazards in Asbestos Industry”. The duly constituted committee was chaired by Mr. D.K. Biswas and included members from government agencies and industry as well as independent experts. The Committee met for the first time in February 1984 and two separate study teams were formed. One of the teams was to study the health problems associated

* Throughout this article “Digvijay factory” refers to the Ahmedabad plant (picture right); for convenience Shree Digvijay Cement Co. Ltd. will be referred to as “Digvijay Cement.”

† Around \$7.7 million in 1975 but \$1 million at the current exchange rate. Further dollar conversions also use historical exchange rates.



with asbestos exposure (the A-team) and the other was to study the existing legal framework (the B-team). There were six industry representatives in the A-team, out of a total of 14 members. The Committee Secretary was none other than Brigadier Kapoor, Executive Director of the Asbestos Information Centre, Delhi.

The Committee submitted its report on July 9, 1985 – the day on which the Indian Association of Occupational Health was established and which is celebrated by its branches as Occupational Health Day. In his preamble to the report of the A-team, Chairman Dr. B. B. Chatterjee, noted: “we believe that we have to learn to live with asbestos; a substance that is going to be with us for a long time to come.” He went on to concede: “...the team was conscious of the absence of suitable epidemiological studies in this country on asbestos related problems. Sufficient expertise and manpower required for evaluation of the workplaces and timely and accurate diagnosis of asbestos-related diseases do not seem to be available to meet the requirement in the country...”⁴

Also in the A-team report was the observation: “...only some cross sectional studies of certain factories in India have been carried out, which are exploratory in nature. They served the purpose of bringing awareness in the industry and persuading all concerned to take effective measurement. We have no national database on which to make an assessment of the impact of asbestos related problems. In the same way we can not, at this time, decide the exposure limits related to our settings...” Can anyone say India has such national data available today – 22 years after this report was submitted?

Study team ‘B’ was headed by Dr. G. G. Davay. The team report noted: “...Some of [the] small scale units and pithead processing units had employed children and adolescents who were being exposed to heavy dust exposures. The team considers that this practice be prohibited.” Since this team did not visit any of the units in Gujarat we do not find any reference to asbestos use in Gujarat in this report. Though asbestosis is a notifiable disease under the Factory Act, notifications are not recorded by the Ministry of Labour.

Consumer Education & Research Center

The Consumer Education & Research Center (CERC) was established in 1978 with the objective of protecting consumer rights and interests. After reading an article published in the New Scientist, in June 1980 a lawyer working at CERC, became outraged, and after discussing the matter with colleagues raised the issue of asbestos hazards with the management of Digvijay Cement. The company wrote back telling her not to worry as due care of worker safety was taken. Not satisfied with the reply, the CERC sought permission to visit the facility. With much reluctance, the company permitted the visit by representatives of the CERC who found many lapses in the maintenance of safety standards. They expressed their concern with the management as well as the Factory Inspectorate, requesting that the Chief Inspector of Factories clarify the Inspectorate’s position and take necessary actions to ensure worker safety. Not satisfied with the responses received, the CERC decided to initiate Public Interest litigation. Since the nature of the issue was of national scope, they decided to file a petition with the

Supreme Court. The petition was accepted for consideration in 1986 but the judgment was long delayed.

Eventually, on January 21, 1995 an order arising from the petition was passed by the then Chief Justice of India, Justice Ahmadi. Important points in the order passed included:

- ◆ Maintenance of health records for 40 years since employed or 15 years after leaving employment (in the asbestos industry).
- ◆ National Institute of Occupational Health (NIOH) should decide on diagnoses in case of disputes.
- ◆ Rs.100,000 (\$3000) compensation to be paid to asbestos-related disease (ARD) victims.
- ◆ Special monitoring of small-scale units manufacturing asbestos products.
- ◆ Regular reviews of permissible limits for asbestos.
- ◆ Setting up membrane filter test facilities for measuring dust levels.

The Ahmedabad Digvijay Factory

The CERC petition to the Supreme Court of India asserted: “... the management of Shree Digvijay Cement Co. is responsible for discharging some of its employees who contracted asbestosis. It is also responsible for not taking any remedial actions for its employees who, in fact, were definite cases of asbestosis.” Supporting this statement was a Central Labor Institute (CLI) report on the factory in which it was said that 20 workers (6.5%) had definitely been diagnosed with asbestosis and 98 (32%) had suspected asbestosis. The petitioners claimed that none of the sick workers described in the report been given compensation for asbestosis or medical facilities for treatment etc.⁵

As reported in a Newsday article⁶ by Bob Wyrick:

“workers at Shree Digvijay said that both temporary and regular employees must wear their own clothes on the job. They have no shower facilities, no individual lockers. Regular industrial filter masks, which do not protect



A protest outside a hospital calling for better occupational health services.

"they explained that since they had neither expertise nor any equipment to diagnose asbestosis, they issued 'fit to work' certificates! "

against asbestos exposure, are provided to the permanent workers. Temporary workers, who might work at the plant every day for many weeks, are issued a face cloth about the size of a bandanna. They wear it bandit-style across the mouth. Floors are swept not wet mopped at this factory. When a worker gets asbestosis, employees said, he is moved to an easier job. As is typical in developing nations, there has never been a strike, much less a law suit, over safety conditions at the plant."

"Around Shree Digvijay Cement factory outside this city (Ahmedabad) are clustered nearly 250 huts. Most house the families of 300 'temporary' employees working as menial laborers in the factory. The huts – mostly consisting of one dark, low ceiling room with a dirt floor – are built from asbestos-cement trash thrown out by the factory, broken pipes and pieces of flawed sheet cement with ragged asbestos fibers exposed where the fragments have been broken."

Comments made by Dr. S. K. Kashyap, then deputy Director of the National Institute of Occupational Health in Ahmedabad, were also reported:

"He described the cutting room, where pipe and asbestos-cement sheets are cut to size with mechanical saws. 'You become white with dust,' he said. 'The air is full of it like makeup for the theater.' About 400 employees underwent physical examinations at Shree Digvijay. But the results of the tests would not be studied until similar tests were administered at all the asbestos facilities in India. 'There are definitely cases of asbestosis,' he said."

Discussing a survey in 1980 focused on asbestos manufacturing facilities in India that had been constructed and operated in collaboration with the world's largest multinational asbestos corporations, Barry Castleman also highlighted conditions at the Digvijay plant:

"In Ahmedabad, Shree Digvijay Cement Company Ltd. produces 50,000 tons per year of Asbestos cement pipe sheet. Its foreign collaborator is Johns Manville Corporation, the largest asbestos company in the Western Hemisphere. Asbestos laden solid wastes are dumped outside of the Ahmedabad factory in a completely wanton

manner. Children play on the waste dumps and workers are not informed of the lethal dangers of the dust."⁷

In the course of the Supreme Court hearing, the Court was informed by the petitioner that a Shree Digvijay worker, Sri Dhiraj Sonaji, had died of asbestos-related disease in May 1984. The Court passed an order to pay the heirs of the diseased worker the interim sum of Rs.10,000 (then around \$800) towards his compensation. Later, Digvijay Cement, though agreeing to pay the said amount, asked that the wording of the order be amended, since it claimed the cause of death was not definitely established. It wanted all mention of compensation to be removed and for the payment to be described as "compassionate." The Court, however, did not oblige.⁵

As mentioned earlier, in 1990, I was part of a small team making a film on the OHS situation in Gujarat. In the course of this project we interviewed some workers from the Digvijay factory union and their union leaders. We were also allowed to visit the plant. The workers told us about the problems they encountered. One of them said: "I am not given any specific information by the company on the hazards of asbestos but I know that it is dangerous as I can see a label on the bag with symbol of danger printed on it. We experience cough while opening the bag." He went on to explain that it was impossible for them to wear their face cloth for the full eight hours of a shift: "it gets clogged and we feel asphyxiation." Additionally, workers would have to remove these cloths to communicate with their colleagues. The trade union leader informed us that their biggest problem was that the doctors did not write diagnoses on case papers. However, if a doctor should record a clear diagnosis, they were "prepared to fight it out."

It was then that the late lawyer Rani Advani told me about a case where the CLI had identified 20 workers suffering from asbestosis. Following a request for the workers to be tested by the NIOH, of the 15 workers who turned up for the examination only 8 were confirmed to be suffering from asbestosis by the NIOH. Referred to the Employees State Insurance Corporation (ESIC) for treatment and compensation, they spent a week in an ESIC Hospital before being issued "fit to work" certificates. When the ESIC were asked, in the Supreme Court to clarify the criterion they used to arrive at "fit to work," they explained that since they had neither expertise nor any equipment to diagnose asbestosis, they issued "fit to work" certificates!⁸

With the plant running into trouble due to Union disputes and financial pressures, the Management declared a lock-out in 1996, shifting one section to their Sikka unit. In 1999, the plant reopened under the new name of Gujarat Composites, but recovery was short-lived and the factory finally closed in 2000. However, this closure did not end the suffering of the workers, most of whom were migrants staying in hutments close to the factory, as described earlier.

Kalyaneshwari, a voluntary organization, joined the struggle against asbestos in 2002, when they filed a complaint with the National Human Rights Commission (NHRC) relating to asbestos hazards to the community,⁹ representing a group of asbestos exposure victims from Gujarat and Rajasthan. Kodanthan Pani Azhakappan whose husband died



after 28 years of service at the Digvijay factory was one of this group. In 2003, the organization carried out a specific study to identify incidences of ARDs. Ninety-three former workers of the company participated in the study. They were medically examined after initial screening by means of a questionnaire. The workers' X-rays were then assessed by a reputable chest physician. Sixty-eight of the workers over 40 years of age complained of chest pain while 83% of all former workers complained of breathlessness. Twenty-four (25.8%) workers were found to be suffering from an ARD. Following the investigations, Kalyaneshwari filed a public interest petition in the Supreme Court, including a demand for adequate compensation for the ARD victims. However, judgment on the case is still pending – the most recent hearing being in January, 2008.

Asbestos in Power Plants: the Ahmedabad Electricity Company (AEC)

Raghunath Manvar, a power plant worker who had worked in boiler maintenance* at the AEC since 1966, observed in the course of his work that workers had become sick due to the poor work environment at the plant. He demanded that the NIOH conduct an investigation and to draw attention to his case, in 1980 during Diwali, went on hunger strike. At this, the Management backed down and itself called for an NIOH study. In the event, it was decided that the Central Labor Institute would carry out an Industrial Hygiene study while the NIOH would deal with the medical examination of workers. Subsequently, however, the recommendations made by these agencies were not implemented and Raghunath felt compelled to lodge a complaint with the Gujarat High Court. His complaint was accepted by the Court and notices were issued to the concerned parties in February 1984. While waiting for the case to be heard, Raghunath came across a woman – Savitridevi – working as a day laborer. She complained that her husband, a permanent employee of the power company had been forced to accept early retirement on health grounds and that she had been employed in his place. Her husband was sick and attending various hospitals but the hospital authorities did not give him proper treatment. She asked Raghunath to intervene. Agreeing to do so, Raghunath visited her husband, Kishan Goplani (below), at his home, where he was shown some

medical papers. Not understanding these, he sought my help, sending me the documents in question. When I went through the papers, I was surprised to see a note written by the doctor treating him at the Public Hospital. The doctor had written: "Occupational Lung Disease." Questioning Raghunath about Kishan's occupational history, I was told that he had worked as a mason for 18 years. I asked another question: "what materials did he handle?" It was then that I learned that Kishan had used asbestos, which was mixed with cement for repairing boiler walls. I guessed then that he was probably suffering from ARD. Raghunath's lawyer had experience with asbestos litigation, and had previously petitioned the Supreme Court on an asbestos issue when working with CERC. She lost no time in filing a petition at the Gujarat High Court demanding diagnoses for Kishan and 7 other workers exposed to asbestos. The Court immediately passed an order directing the NIOH to examine Kishan and report to the Court. After the NIOH had examined Kishan on April 1, 1996, and confirmed asbestosis, on May 5, 1997, the Court ordered the Ahmedabad Electricity Company to pay Rs. 25,000 as interim compensation pending a final order. Regrettably, Kishan had breathed his last on April 11, 1996, only 10 days after his examination by the NIOH. Out of the remaining seven workers in the case, two died before they could be examined and only one – Mangabhai Patel – was eventually diagnosed with an ARD; on June 24, 1997 the Gujarat High Court ordered a payment of Rs.10,000 (then around \$280) from his employers.

Raghunath Manvar formed the Occupational Safety & Health Association (OHSA) in 1998 to keep up the struggle of the power workers to obtain proper health and safety regulations and social justice. In the Kalyaneshwari study mentioned earlier, nine power plant workers were included – all nine were found to have ARDs. In addition, spouses of three of them also were found to be suffering from ARDs due to secondary exposure.

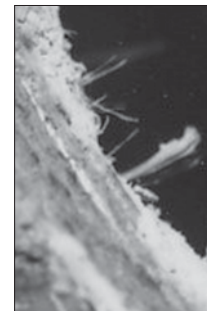
The power company claimed, in a written submission to the Chief Inspector of Factories in 1995, that it had discontinued the use of "asbestos fibre" and "asbestos powder" for insulation but gave no date when this had occurred. However, the company admitted that asbestos rope was continuing to be used, but in reduced quantities as evidenced by a table included in the submission (below).¹⁰

Year	Quantity used in kg/year
1993-94	1228 kg
1994-95	745 kg
1995-96	342 kg

Contradicting the above claims, workers allege that asbestos is still (2008) widely used by the company.

There are elaborate provisions in the Factory Act for monitoring workers' health but it has failed miserably in protecting workers' health. Medical records maintained by the AEC did not show any abnormalities.

On June 6, 2007, a temporary clinic ("diagnosis camp") was set up to carry out medical checks on 20 workers from the AEC and the Digvijay factory. After taking occupational histories and conducting clinical examinations, the workers' X-



Kishan Goplani

*Asbestos is used in power plants for boiler and turbine insulation. For turbines it is used for insulation on cover body, HP heater, LP heater, main steam pipe, glands for steam valves, and in the form of asbestos rope on small steam tracing pipes. In the boiler section it is used on the dead zone, steam header, steam pipes, oil burner nozzle, ducting windows, all types of valves and packing.



Asbestos disease victims Prabhulal Berwa and his wife Anandivedi, whose exposure to asbestos came from her husband's work clothes.

rays, were assessed by Dr. V. Murlidhar, an expert in the field, using standard ILO plates for comparison. The results were as shown below:

- ◆ Eight had asbestosis – five AEC workers, one spouse of an AEC worker, two Digvijay workers.
- ◆ One lady had coal miner's pneumoconiosis – AEC worker.
- ◆ One had asthma – Digvijay worker.

One of the workers was being treated, irrationally, for TB; there was no radiological indication of this disease. Another receiving treatment for TB had healed lesions. Possibly, asbestos induced pleural plaques were being misdiagnosed in these cases, and elsewhere.

Raghunath tells of a classic case revealing how decisions regarding ARDs are taken by medical professionals. The NIOH, acting on a High Court order, had examined a number of asbestos-exposed workers and diagnosed two with ARD. Later, in 1997, the ESIC Board also examined these workers. Following the examinations, as the Board medical experts were leaving, one asked Raghunath why he had not brought a worker whom he had examined earlier and found to have ARD. Raghunath indicated one of the workers and told the expert that this was the same person the expert had examined previously at the behest of the High Court. On hearing this, the expert immediately called the man over and, after a brief conversation, announced that he had changed his decision, reverting back to his previous diagnosis. This is how they work – medical decisions made to order.

Workers have to struggle for compensation in spite of the Supreme Court order of 1995, and the legal processes are extremely slow. Since the NIOH was made the authorized body to verify asbestos-related diseases, when the OSHA decided to settle the case of the power workers out of court, the AEC insisted on a fresh examination of the workers by the NIOH,

even though some had already been found to have ARDs in NIOH examinations undertaken in 2005. In the new tests, carried out in November 2007, the NIOH failed to confirm its original diagnoses, leaving the out-of-court settlement cases of the five workers in limbo. However, Raghunath was able to obtain compensation for the two victims identified by the NIOH following the 1996 Court Order. The late Kishan Goplani's daughter received Rs.150,000 (then \$4170) and Mangabhai Patel Rs.160,000 (\$4450).

Other Sources of Asbestos Exposure

As mentioned earlier, the ship-breaking facility at Alang, now reputed to be the largest in the world, is the site of hazardous exposures to asbestos (and other toxins). This is the subject of a detailed exposé by Gopal Krishna elsewhere in this monograph. However, my own experience includes a visit to the Alang yards in 2005, when I observed a heap of asbestos fiber originating from a ship being broken at the time. I asked my guide, a field worker employed by a voluntary organization, working on HIV/AIDS with migrant workers, whether he knew what it was. I should have been surprised when the man, himself employed in the health field, expressed his ignorance, but, such is the low level of public awareness of asbestos hazards in India, that I was not. In Alang asbestos may be seen everywhere – spread from the beaches into the town and the primitive dwellings of the migrant workforce.¹¹

I also remember a day in 1988 when I visited a small unit manufacturing safety gloves to invite the owner to participate in a safety exhibition my group was organizing. Entering the gate I could see some workers busy sewing gloves inside. It was morning and sunrays filtering through a window behind the workers revealed dust particles floating in the air. Passing by the workers to meet the owner, I observed that the gloves were being fashioned from asbestos cloth. Much later, in 2000 or so, I received a visit from a renowned photographer, Hein du Plessis from South Africa, who was assembling a photographic dossier of asbestos workplaces and victims of asbestos misuse in India. I took him to a safety equipment trader having a shop right in the heart of the city of Vadodara. We observed pieces of material, that would later be used to make asbestos gloves, being cut from a big roll of asbestos cloth stored on the premises. The gloves were made in a sewing room situated in an added mezzanine floor of the shop which was barely 4 feet high. Unable to stand the workers sat hunched at their sewing machines. Huge mounds of asbestos gloves were stacked around them. The trader informed us that gloves were also sewn by homeworkers, a fact which I observed for myself when I visited a residential area in Baroda.

Gujarat also has a factory manufacturing asbestos-cement sleepers for the railways.

Once, in 2006, I had occasion to visit a new cancer hospital. On being introduced to a head of department there, I asked if they were getting any cases related to asbestos. Answering in the affirmative, he gave me a list of 11 patients who, he thought were suffering from ARDs. Unfortunately, for operational reasons, we have not yet conducted further enquiries into the status and exposure history of these patients.

On February 21, 2008, funded by a grant from the Gujarat Department of Labor, the PTRC conducted a training session on Health & Safety at Rajkot. The participants were shop-floor workers from local industries. They became particularly interested when I brought up the subject of asbestos. Workers from two units informed me that they were using asbestos powder in furnace insulation material; one of the participants, a mason using this material, said he had never heard of the hazards of asbestos. They wanted more information which I gave happily. In their written feedback on the program, most expressed they had learned valuable lessons – for the first time they had become aware of the hazards of asbestos and the toll it had been taking in India and globally.

Compensation for Asbestos-Related Diseases

The Employees State Insurance Corporation, formed under the provisions of the ESI Act, is responsible for paying compensation to insured persons for listed occupational diseases. Asbestos-related diseases are listed diseases. In Gujarat, the ESIC has paid compensation to just eight workers for ARDs.¹² All were employees of Digvijay Cement. Another possible source of compensation is the Workmen's Compensation Act, but I have not heard of any successful claims under this Act in Gujarat.

Conclusion

It is evident from the reports we receive, that the 1995 Supreme Court order regulating the asbestos industry is not being implemented properly, neither are the provisions of the Factory Act relating to occupational health and notifiable diseases. In the present climate of trade liberalization, trade unions lack the power to challenge the prevailing crisis of governance. However, the activities of some NGOs are making some impact; victims and their families are waking to the threat that asbestos poses and coming forward to set up their own support groups.

More research is needed. At present, for Gujarat and India generally, it is not known: how much asbestos is used in particular locales, how many and which workers are exposed to asbestos dust or how many are suffering from ARDs. The workers for their part do not know where and from whom to seek medical help and justice. Workers need to be informed of asbestos hazards. Government has to be pressured for better implementation of laws.

The Supreme Court settled on the NIOH to be the final authority in diagnosing ARDs. There is a need to set up a panel of experts drawn from different institutions to verify diagnoses rather than this single authority. No one knows about the inner workings of the NIOH: whether at any given point of time they employ suitably experienced clinicians; whether decisions are taken individually or by a panel. There should be some provision for challenging their decisions.



Safety gloves sewing room, Vadodara.