

WATER QUALITY

Unclogging the Khari River

Stakeholders Come Together to Halt Pollution

This case study reports on how the various stakeholders came together to alleviate the problem of effluents discharged by factories in the industrial estates on the eastern periphery of Ahmedabad into the Kharicut canal that flows into the Khari, a tributary of the Sabarmati.

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Ahmedabad city was once known as the Manchester of India because it had the highest number of composite textile mills in the country. This gave rise to a large number of small- and medium-scale dye and dye stuff manufacturing units - most of them are located in industrial estates promoted by the government of Gujarat through the Gujarat Industrial Development Corporation (GIDC). Four such areas are Naroda, Odhav, Vatva and Narol on the eastern periphery of Ahmedabad city. These estates were the first to be promoted by the government during the late 1960s and early 1970s. At that time, while there were zones for industries according to the type of waste generated, environmental considerations were overlooked and no provision was made for the safe disposal of industrial effluents.

Most of the factories in the industrial estates are water intensive and all of them discharge effluents into the nearby Kharicut canal, which flows into the Khari river, a tributary of the Sabarmati. As the canal remains dry throughout the year, the government ignored its (mis)use. The effluents discharged from Naroda and Odhav industrial estates flowed into the canal that connected to Vinzol Vahela, a stream that carries waste from the Vatva

industrial estate near Vinzol village. The Vatva industrial estate houses almost 2,000 industries of which at least 500 fall into the polluting category and let out high volumes of effluent into the stream (Naroda: 3 MLD, Odhav: 1.2 MLD and Vatva: 16 MLD).

Common effluent treatment plants (CETPs) were set up in all three industrial estates after the Gujarat High Court passed orders that they be set up. The CETPs are designed to treat effluent to meet standards related to pH, suspended solids (SS), oil and grease, chemical oxygen demand (COD) and biological oxygen demand (BOD) but they are not designed to meet standards related to total dissolved solids (TDS) and heavy metals. Nevertheless they are useful because the member industries who also run these CETPs can no longer shrug off their responsibility towards a cleaner environment. As far as TDS and heavy metals are concerned, the solution worked out by the government and the industries involves conveying all the effluents from CETPs and from factories that have their own secondary treatment facility into the mega pipeline which joins the Pirana Ahmedabad Municipal Corporation (AMC) sewage treatment plant before being discharged into the Sabarmati. Here, the treated industrial effluent mega pipeline mixes with almost 50 times greater its volume of treated sewage. At the point where the sewage is finally discharged into

the Sabarmati, it reportedly meets all the parameters of the Gujarat Pollution Control Board (GPCB).

Some small- and medium-scale industries continue to discharge effluents into the medium and deep aquifers directly through tube wells in a process locally called "reverse bore technique". This has resulted in groundwater contamination up to a depth of 183 m. About 110 villages downstream of these three industrial estates (40 on the banks of Kharicut canal and 70 on the banks of Khari river) are drinking polluted "colour" water for 20 years. Representations from the affected villages to the government and pollution control authorities did not yield any results. Finally the court awarded compensation to the affected villages – the fund is to be used towards health and economic development – but nothing came of it because of disagreement between the villagers and the government on how the money should be used.

Khari river originates from the hills near Nandol, 20 km east of Gandhinagar, bordering Ahmedabad district. This first order river joins the Meshwo river, a tributary of the Sabarmati near Vautha on the border of Kheda district. Meshwo meets the Sabarmati at Kheda 50 km down the route.

The 80 km Kharicut canal that begins from Raipur village was constructed more than 100 years ago during the British period for the purpose of providing irrigation support to 10,200 ha in 110 villages spread over 80 km in Daskroi taluka of Ahmedabad district and Mahemdavad taluka of Kheda district. Today, a total of about five lakh people are affected by air and groundwater pollution as are thousands of hectares of agricultural land.

Sick River, Ailing People

In spite of the CETPs the problem has not been completely resolved. Further, the Khari river and canal have now become a bone of contention between the industries and the farming community, in particular those who live on the banks.

Owing to the absence of adequate and appropriate drainage systems in these three industrial estates some of their suburbs let out sewage into the Kharicut canal. While Naroda and Odhav estates manage to dispose off their sewage through soak pits, pipes connected to CETP or nearby AMC drainage pipes meant for domestic sewage, the Vatva industrial

estate has an acute problem because of the absence of a sewage disposal network system.

For more than two decades now people in this belt have been suffering from land and water pollution. Health-related problems include skin diseases, stomach and intestinal ailments and bronchial problems. The local people say that the mosquito menace is intolerable and that young children often cry right through the night. The strong stench emanating from the polluted water makes it even worse.

Groundwater contamination resulting from the illegal release of untreated effluents into the river during the night or direct injection into tube wells is another serious problem. During 2002-03, when the 183 m deep bore wells started yielding contaminated water, the panchayats of Chosar, Gamdi, Devdi, Ropda and Vinzol drilled 250 m bore wells, which also soon started yielding "colour" water.

People are forced to drink this polluted water in the absence of an alternative source. Many families walk long distances to fetch comparatively better quality water from farm tube wells. Livestock casualties and reduction in milk yield have adversely affected the village economy, since supplementary income is now denied the families.

Marriage? No, Thanks

The air and water pollution has also generated a variety of social problems for the people. In Gamdi village, for example, there has been a steady reduction in marriage proposals. The girls' families fear that chronic health problems and difficult daily lives, where women have to walk long distances to fetch drinking water, might make marriage very difficult for them. Also, deteriorating soil fertility has had an impact on agricultural produce, which in turn has meant reduced income. All of this has made the village an unviable place to live in and has led many people to migrate to Ahmedabad city.

Chronology of Events

1978: People from the affected villages start representing their problems to the government.

1988-89: A group of villagers filed a petition in the Gujarat High Court (Special Civil Application Nos 7063 of 1989 and 598 of 1989) seeking intervention.

1995: Two persons from Navagam, Matar

taluka, district Kheda (one of the Kalambandhi¹ villages) filed a Public Interest Litigation (PIL) in the high court (Special Civil Application No 770 of 1995) against government inaction.

1995: The Gujarat High Court delivered a landmark judgment, "Polluter Pays", that says: "Since for the last number of years pollution has adversely affected the 11 Kalambandhi villages of Kheda, as also villages of Lali, Navagam, Bidaj, Sarsa, Aslali, Jetalpur, Bareja, Vinzol and Vatva comprised in Dascroi and Mahemdavad talukas, a lump sum payment should be made by the 756 industrial units, calculated at the rate of 1 per cent of their one year's gross turnover for the year 1993-94 or 1994-95, whichever is more and that amount should be kept apart by the ministry of environment and should be utilised for the works of socio-economic uplift of the aforesaid villages and for the betterment of educational, medical, and veterinary facilities and the betterment of the agriculture and livestock in the said villages" (Final Order, p 114 – Pt xii).

1998: Most of the factories that had been shut down were allowed to reopen after they commissioned primary treatment plants and gave written assurance to the court that they would take the responsibility for secondary treatment either on their own or through the CETP.

1999: By the end of the year all the three industrial estates had CETPs to take care of secondary treatment for small industries. These are concerns that use less than 25 kilolitres of water per day. Water intensive industries that consume more than 25 kilolitres of water per day also established their own secondary treatment plants.

2000: During 2000-01, the AMC laid a mega pipeline with a pro rata contribution from industries. The mega pipe mainly conveys treated industrial effluents from all three GIDC estates; it also carries waste from an Odhav-based estate established by the Gujarat Chamber of Commerce and Industry known as Gujarat Vepari Mahamandal Audhyogic Vasahat Ltd and another estate located at Narol that mostly has textile processing units. The treated effluent is being discharged into the Sabarmati at Pirana where AMC also discharges sewage after secondary treatment. This treated sewage also dilutes the industrial effluent being discharged into the Sabarmati.

2002: The government widened and lined the canal to carry more rain water to avoid

flooding; the state also revived it as a live canal by diverting Narmada water through it. Thus the problem with the Khari canal has almost been solved except for the domestic sewage load from the suburbs and occasional leakages from the mega pipeline maintained by the AMC.

2004: A fresh PIL under SCA No 4690 of 2004 was filed by the villagers seeking high court intervention for appropriate utilisation of the fund. The high court has also admitted a suo motu (SCA No 9618 of 2004) application based on a letter by an NGO² to the chief justice to address the unresolved grievances of the villagers. The report of the working group of the SSF industry core group was one of the main supporting documents.

November 2004: The government of Gujarat constituted a high power committee, under the chairperson of the chief secretary, specifically to address the problem of the Khari river and canal pollution. Apart from the collector, other members include members from industrial associations, AMC, Ahmedabad Urban Development Agency (AUDA), GIDC, GPCB, irrigation and industry departments and ministry of forests and environment.

NGO to the Rescue

Though the Khari canal is now almost free from industrial pollution, Khari river continues to carry effluents because: (i) Industrial effluents frequently overflow from a few manholes connected to the mega pipeline.

(ii) A few industries at Vatva industrial estate still dump effluents into Vinzol Vahela – free discharges and dumping through tankers at night to save treatment charges in the CETPs.

A large number of bore wells in the villages continue to yield contaminated water. Rain water harvesting might recharge the groundwater and help dilute the pollutants in a few years' time.

There has been no consensus between the government and the affected villages on the set of activities for socio-economic development. The Rs 18 crore (including interest earned till now) that the villages won as compensation, thanks to the court's judgment remain unutilised.

In 2003, the Vikram Sarabhai Centre for Development Interaction (VIKSAT) studied five villages to understand pollution related problems. In an effort to strengthen the industry subgroup of the Sabarmati stakeholder's forum

(SSF), a core group³ was formed in December 2003 with specific focus on four industrial estates: Naroda, Odhav, Vatva and Narol.

Regular monthly meetings of the SSF industry core group and discussions on the groundwater, Khari river and Khari canal pollution issues facilitated action by the members. Government departments also began to support the cause by providing data, attending meetings and sharing their viewpoints. A working group was constituted and it visited the river and canal, covering a distance of about 25 km. Water samples were collected and analysed. The report was tabled at a subsequent core group meeting and then submitted to the GPCB. As a standard practice, the minutes of the monthly meetings are shared among all members, including government departments.

The Strife Continues...

There are three major problems. Firstly, some factories have refused to cooperate and covertly continue to release untreated effluent into the river. Secondly, there is the issue of leakage from the mega pipeline in the Naroda and Odhav industrial estates. Thirdly, government monitoring and control is not adequate. While serious efforts to resolve the issue should have come from the industries, they resort merely to informing the pollution control authorities in case of a problem.

There are some contentious arguments. Industries generate employment and contribute to the economic growth of the state, the country and the people; therefore the government should take care of factory waste. The additional cost incurred for sewage treatment is eating into the companies' profits; this is a difficult situation in a competitive global market. Damage to the soil and groundwater has resulted in production losses. The household economy has suffered due to problems resulting from pollution; health and social problems have followed. The overall loss of livelihood opportunities is huge and the long-term consequences are grimmer than loss of employment due to closure of industries.

...but There's Hope Yet

The response of many of the concerned government departments to the industry core group meetings has been heartening;

this positive approach has strengthened the stakeholders forum. Further, the appointment of a high power committee for the Khari river pollution problem by the state government in November 2004 under the chairpersonship of no less than the chief secretary conveys the right message. As of now, the SSF is not a member of the high power committee. It would be yet another move in the right direction if the two groups were brought together.

Most stakeholders including various government departments certainly appear to be seriously interested in looking for solutions to mitigate the problems of the villagers. Newspapers too are playing their role by helping the people air their views. Hopes have been rekindled and it is imperative that the dialogue process move forward. Villagers are praying for deliverance from all aspects of the pollution problem. They have certain basic needs. Safe and assured drinking water for them and their livestock can only be made possible if all pollution is halted. They hope that the municipal authorities will provide drinking water, including from the Narmada canal. They also demand that contamination of groundwater aquifers should be stopped forthwith through stringent measures. Technical support should be forthcoming to improve soil fertility. Free/subsidised health services should be provided in the neighbourhood. A special development fund for infrastructure development should be launched to build good roads, schools, drainage system, public toilets, a community centre and a library.

A Programme Implementation and Monitoring Committee funded by the award money and supported by NGOs should be instituted to implement the following schemes:

(1) Large-scale artificial recharge of groundwater on scientific lines using dry/abandoned wells, local water bodies such as ponds/tanks. VIKSAT has demonstrable experience [Mudrakartha 2004].

(2) Providing subsidies to farmers for constructing borewells with proper well construction to prevent future rupture of the casing pipe.

(3) Suitable compensation packages should include free medical treatment for those who suffered due to the pollution.

The people have finally seen a ray of light at the end of the tunnel after 25 years

of suffering because of the stakeholders forum. [EPW](#)

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Notes

- 1 Kalambandhi (bound by the agreement) villages are those who had an agreement with the British government to use Kharicut water for irrigation purpose.
- 2 Also a member of the SSF industry core group.
- 3 The core group comprises the presidents and secretaries of four industrial associations, representatives of common effluent treatment plants of Naroda and Vatva, NGOs such as Consumer Education and Research Council, Centre for Environment Education and Centre for Social Justice, representatives of

government departments/agencies such as Gujarat Water Resources Development Corporation, Central Groundwater Board, Gujarat Water Resources Department, Gujarat Pollution Control Board, Ahmedabad Municipal Corporation, Ahmedabad Urban Development Authority, etc. In addition, there are also some advocates, scientists, architects, engineers, geologists and social scientists from some research and academic institutions such as Physical Research Laboratory, Ahmedabad Textile and Industry Research Association.

Reference

Mudrakartha, S (2004): 'Ensuring Water Security through Rainwater Harvesting: A Case Study of Sargasan, Gujarat', *Water Nepal*, Vol11, No 1, pp 75-83, August-January.