

GOLDEN CORRIDOR: DIGGING OUR OWN GRAVE

AN INVESTIGATION BY INDIAN PEOPLES TRIBUNAL.

Paryavaran Suraksha Samiti has been trying to study and create awareness on the impacts of industrial pollution for the last few years. By networking with various groups we have been able to reach people in Sarigam, Vapi-Kolak area (affected by Vapi Industrial estate), Ankleshwar (Ankleshwar Industrial estate). Mangrol (lignite mines - Dist. Surat,) Nandesari (affected by Nandesari Industrial estate), and villages affected by large corporations, such as Gujarat State Fertiliser Corporation, Gujarat Alkalies and Chemicals Ltd., Indian Petrochemicals Ltd. and Gujarat Refinery (IOC). Regular contact with affected people is maintained by holding public meetings to share information and decide on programmes. Carrying out necessary laboratory tests and analyses, involving scientists and experts for technical guidance and site inspections, dialogues with concerned industries or Government regulatory authorities, and occasionally supporting public interest litigations, have been our tools thus far.

Our experience has been that:

- Industries either refuse to own responsibility or try to hide their violations. They are sometimes too brazen to feel any qualms or remorse and/or take refuge in the fact that they have fulfilled all legal requirements. With the massive exploitation of natural resources and the process of environmental degradation getting out of hand, this is, obviously, not enough.
- The law enforcing agencies do not have the will to act, are not equipped to fulfill their duties, are too corrupt to act and existing laws, regulations and procedures are simply inadequate.
- The affected people are usually poor, migrant and are caught in the daily struggle for survival. Their tendency is to act only when it becomes impossible to escape, and to slip into apathy as soon as the storm blows over.
- Existing policies and programmes do not have the common human being and their basic needs as a priority, have very short-term goals and are threatening to the natural and common property resources.

When state policy works against the common citizens, where courts can adjudicate only within the existing set-up and given the affected people's plight there are very few avenues left of redressal for the victims. Paryavaran Suraksha Samiti, therefore, invited the Indian People's

Tribunal to investigate what are not only severe pollution of air, land, surface and groundwater but what is also a gross violation of human rights.

The **Indian People's Tribunal** has sought to propagate the need for a balanced development that would promote justice, equality and human dignity by bringing to the notice of the judiciary human rights and other violations by the State or any other organised power. It has investigated communal riots, natural disasters such as the Jabalpur earthquake, impact of shrimp farming on agriculture etc. and published detailed reports. The Indian People's Tribunal report on shrimp farming was accepted by the Supreme Court and a petition based on it led to a court ruling in favour of the traditional farmers whose lands were being taken over for shrimp cultivation.

The Indian People's Tribunal to investigate environmental pollution consisted of various experts in the field of law, chemical engineering, public health, occupational health and geology.

The panel included

1. Justice H. Suresh retired judge, Bombay High Court.
2. Girish Patel, advocate, Gujarat High Court.
3. Prof. K. C. Sahu, retired Head of Department of Earth Sciences, I. I. T. Bombay.
4. Suhas Paranjpe, Chemical engineer and researcher in alternatives
5. Vijay Kanhere, expert in Industrial and occupational health.
6. Dr. Ashwin Patel, pediatrician and public health expert.
7. Dr. Amar Jesani, public health expert.
8. Nimita Bhatt, public health activist
9. Maharukh Adenwala, lawyer
10. Kerban Anklesaria, lawyer
11. Vinay Mahajan, agricultural engineer.

THE SIX PRESENTATIONS:

The petitions tried to highlight the most serious environmental problems along the 200 km corridor from Vapi (Dist Valsad) to Nandesari (Dist. Baroda) that forms the worst affected segment of the 400 km long 'golden corridor'. This is where Paryavaran Suraksha Samiti has focussed attention over the last couple of years.

VALSAD/Vapi

Valsad, the southernmost district in Gujarat has been known as the fruit basket of Gujarat because of its Mango, Guava, Chikoo, Coconut etc orchards, for its highly productive rice fields. This image has changed of late.

The district has attracted considerable investment in chemical industries with establishment of Vapi industrial estate in 1967, and other chemical and pulp-paper mills in the district. Now the district is known for its industrial development, heavy pollution and diminishing agricultural produce. The air pollution wakes up people from their sleep in the night and trains are routinely delayed during the evenings/nights due to low visibility. A local journalist alleges that the divisional railway officials have complained in writing to the collector of the district.

The experts team for the People's Tribunal visited the region on 22nd January, 1999 and assessed the situation first hand.

Due to the pollution in Kolak and Daman Ganga rivers, the riverine and estuarine fish have vanished severely depleting the income of the poorest of the fishing community. Kolak and Daman villages are populated mainly by these fishing communities.

Even those fishermen who can afford motorised fishing boats have to go more than ten k.m. into the sea as Daman Ganga and Kolak rivers are big enough to push the pollutants that far into the sea. The river Damanganga is polluted by treated as well as untreated effluents from the Vapi estate while the river Kolak is polluted by untreated effluents of the same estate carried to the river by Bil Khadi.

The Gujarat Pollution Control Board started monitoring Bil Khadi after 1995 and even its annual average readings are way beyond its own norms, still nothing is done. And part of the effluents received by Damanganga are received from the common effluent treatment plant and still the river is red/foaming/stinking all the way to the estuary! The experts panel also visited the effluent out fall at Daman Ganga and Bil Khadi.

The officials of Vapi as well as Valsad chapter of Indian Medical Association also had a meeting with the experts panel. They said that over half of all patients coming to the doctors in Vapi were there for respiratory ailments and incidence of other illnesses like skin diseases, etc. were very high. Though no systematic data was available they expressed the need as well as their support for such a study.

The situation of hazardous solid waste was very bad but is improving a big with t he court orders, but there is no real solution to the problem. Originally hazardous solid waste would be strewn all along the roadsides etc. while now they want to dump it into what the industry calls "secured landfills". Experience world over has proven that no landfills are seemed and all of them leak and leachate pollutes ground water and soil.

Recent knowledge about air pollution shows that there are no real safe limits to the pollutants in the air. The air in Vapi estate and around many industries in Valsad is so bad that productivity of fruits has gone down by over 50%.

The presentation on Vapi also brought to notice that a 1996 World Bank study has calculated w3ith conservative estimates that the economicloss dueto environmental degradation is around 4.5% of Gross Domestic Product(GDP). This meansthatthe annual growth of the economy is nullified by the losses due to environmental degradation! The actual losses are much higher, meaning a negative rate of growth.

Some of the measures suggested to mitigate the situation include:

- Involving affected polulations (farmers, fishing community) in monitoring and regulation.
- Moratorium on expansion of these estates/industries.
- Changes in technologies to achieve zero effluent and solid waste.
- Assessing regional environmental impacts instead of individual industrial impacts.
- Pollution cess and banning of certain products/chemicals.

Ankleshwar

The presentation on Ankleshwar highlighted the grravity of the situation there. Over sixty percent out of an investment of around Rs.1,25,000.00 crores (\$31 billion) is in pipeline in Gujarat. There are 169 existing large and small industrial estates and another 105 planned in the State. Bharruch district has attracted a disproportionately large chunk of investment in hazardous chemicals and concentration of industrial estates: viz.

Ankleshwar	4000 acres	Jhagadia	7000 acres
Dahej	15000 acres	Panoli	3000 acres
Vagra	3500 acres	Valia	2000 acres
Bharuch	2000 acres		

Ankleshwar town has a population of 78,000 whereas the slum-like colonies here sprouted on the periphery of the industrial estate house around 25,000 people living without basic amenities such as water, sanitation, health set-up etc. Around 60,000-70,000 people work in the estate. The whole area shows a very skewed male-female ratio.

The industrial estate consumes over 45 million litres of water from the Ukai canal and 100 MW of electricity. A cursory look at Ankleshwar would leave one in doubt whether any environmental regulations exist in this state. Industries here generate over 40,000 tonnes of hazardous waste and discharge over 32 million litres of toxic effluent through open channels into river Narmada. Scientific analyses of this effluent showed the presence of hundreds of toxic components. Not only is the surface water highly polluted, the contamination of ground water is even more serious. A preliminary survey of a part of the slum colonies showed 55 out of 65 handpumps and borewells had yellow to red coloured water, some of which were either acidic or smelt of unknown chemicals. Tests have also shown high levels of nitrate and flouride in the groundwater.

Hazardous solid waste has been indiscriminately dumped on open spaces, around water bodies without any concern about their impact on the local water soil or living organisms. There has been no known investigation for traces of toxic residues in agricultural produce or in the milk of cattle grazing in the area.

The solutions presented by industries, such as Common Effluent Treatment Plant (CETP) or hazardous waste landfill either hide or transfer the problem. In any case they are not durable solutions, e.g. CETPs only deal with only the barest basic parameters at best whereas the composition of effluents is highly complex. Or the landfills's stated life is at the most a couple of decades whereas the toxicity of chemicals can persist much longer. Moreover, there are doubts about the their quality too. e.g. the landfill in Ankleshwar (with German Technology) is said to conform only to German urban waste standards, not to toxic and chemicals standards.

The effluent in Amlakhadi in monsoon, is known to damage crops and soil in Piramal, Amboli, Borida, Diva, Haripura, Sajod, Dhaturia, Taria, Matied, Methiya, Shera, Ganpatpura etc.

There is no way accurate date on accidents and deaths due to accidents in plants can be obtained. Detailed health studies of people in the area both 'in-plant' and those outside need to be carried out.

We hold that

- there should be a moratorium on new hazardous industries and further expansion.
- The regulatory board should be better equipped to deal with the myriad problems created by such industries.
- There should be greater transparency in the working of the regulatory bodies, information be made public and forming of citizens' watchdog committees.
- Immediate steps to stop contamination of groundwater including punitive action should be taken.
- detailed studies on the impacts of environmental pollution on land, water, air, flora and fauna need to be initiated immediately.

The regulatory agencies and district administration did not respond to our invitation to make their presentation.

(Surat Lignite Power Project (by Gujarat Industries Power Corporation Ltd.)

(Presentation on Impacts of Mining)

Most people consider electricity a basic need, and would justify any scale of expansion. The real environmental and human health cost involved right from stage fuel is mined to the time electricity becomes available to us at the flick of a switch is never realised. The value of minerals extracted has grown from Rs.64 crores in 1947 to Rs.32,300 crores in 1995.

Power generation in Gujarat is sought to be doubled from the present 6200 MW to 12000 MG in six years. This will be fuelled by extensive lignite mining from Surat in South Gujarat to Bharuch to Bhavnagar to Kutch in the north west.

GIPCL is setting up a huge power plant near Mangrol (Surat district) and has therefore acquired 3840 acres of land for lignite mining. It is in the process of acquiring of another 5200 acres, (i.e. two separate mines adding up to 36 sq. kms).

Any kind of mining wreaks untold havoc on the area and its geography, disturbing rivers, canals and other water bodies. Mining also has a detrimental effect on local vegetation. The excavated material is dumped covering huge productive tracts. These overburden dumps then erode into fertile lands making them unproductive, silt-up live water bodies etc. The sulphur contained in the lignite is held responsible for sulphur dioxide emissions leading to acid rain.

We have already reported on the Rajpardi lignite mines.

At least 1 lakh (hundred thousand) people are likely to be affected by the Mangrol lignite mines out of which 25000 people will be directly affected. River Kim will have to be diverted due to these mines.

The power plant will generate large quantities of fly ash which is likely to leach into the groundwater from the ash ponds. Some of the fly ash containing arsenic, chromium, lead is likely to escape into the atmosphere, not to mention carbon dioxide and carbon monoxide is supposed to cause rise in temperatures.

We believe that these impacts need to be sensitively and scientifically studied,

- those dispossessed of lands must be given alternative land,
- alternative sources of energy are explored and promoted as fossil fuels are irreplaceable capital assets.

Nandesari Industrial estate

This estate was developed in 1968-69 as a chemical estate. It is spread over 220 hectares of fertile land. The estate is situated along the river Mini which meets river Mahi at a distance of 30 km. There are about 250 units in the estate comprising chemicals, pharmaceuticals, dyes, dye-intermediates, pesticides, plastics etc. The estimated quantity of effluent generated from the estate is around 9 million litres per day out of the 11.5 million litres drawn from private and GIDC borewells.

Apart from the small and medium units giants such as Indian Petrochemical Corp.Ltd., Gujarat Alkalies and Chemicals Ltd., Indian Oil Corporation aggravate an already acute problem.

On the one hand the industries mine large volumes of water from Mahi river and through tube wells and French wells upstream and on other hand discharge hazardous effluent downstream. This has adversely affected the quality and quantity of water. Initially open wells become unfit for drinking water due to increase in Nitrate, Chlorides and TDS (Total Dissolved Solids) and gradually underground sources also deteriorated because of:

- 1 Constant **discharge of effluent** waste to river Mini & ultimately to river Mahi upto year 1983 and on other side depletion of recharging of underground water source from river Mahi due to

huge drawl by industries resulted into increase in Nitrate content and other parameters first in the upper aquifer of open wells and later on in deep aquifers of bore wells.

- 2 The **emission** of particular matters from the stack of industries, settling in the surrounding area and leaching to underground aquifers along with rainwater.
- 3 **Unauthorized use of effluent** from Effluent Channel by farmers for irrigation purpose in their fields located in the vicinity of Effluent Channel as the effluent being rich in its nutrition value.
- 4 **Increased and excessive use of fertilizers** in the surrounding industrial complex. Due to this reason, Nitrate produced in excess of the needs of plant life are carried out away in water, percolating through the soil because the soil does not have ability to hold them. This frequently results in relatively high concentration of nitrates in the underground water.

Soil: A VUDA study (1984-85 has concluded that the main crops of paddy, wheat, potato, tobacco, tuver (pigeon peas) and fruit, recorded 30% to 80% lower yields. The situation has only worsened since 1984-85 and very little meaningful action taken until 1999.

Effluent channel Project. The 55-km long effluent channel with 24 villages along its course is in an unspeakably bad shape. Many industries divert their effluents into it without permission. This highly toxic effluent is used to irrigate farms whose produce is then sold in the Baroda markets. Numerous accidents take place involving cattle and children because the channel is in a state of total disrepair at a number of places.

Air pollution:

Air Pollution most difficult task:

Air pollution is the great problem in the area. The most difficult period is the winter season. The company has learned a lot how to manipulate it. They generally do air pollution on the Government holidays and late night or early morning. When people complain to the authority, they have no official to look into and when they have, they take 2-4 hours to reach the place. The GPCB (Gujarat Pollution Control Board) inform the company and when they reach the site, the company immediately slows down the production. When they reach the site the pollution level goes down and they say that there is no pollution, you are making false complaint and as soon as they go back, within half an hour the air pollution starts again. This is the most difficult aspect for the villagers to prove.

We feel that air pollution can only be measured by the agency that does secret monitoring. The person who comes in early morning or late evening by train either of the site of Vadodara can have clear idea about the arrival of Vadodara or departure of Vadodara. This is the most difficult aspect of the pollution for routine life and it must be dealt with firmness.

HEALTH:

The most difficult aspect, in the sense of technicality, investigation and case study report, to have a "concrete" proof regarding adverse effect of pollution on health. One aspect is of the workers who are working in it and other about the residents residing around the industries. The workers occupation health problem is dealt in the separate petition. But one important aspect about the health problem of the worker is that they are deprived of the basic information as per section 41-B of Factory Act, 1948. Another technical aspect is the TLV (Toxicity lethal value) limit. Because of the movement of the environmentalist, the industrialist has started to talk about "threshold limit value" [TLV]. Threshold limit value does not provide protection to the worker's health and environment around the industry. TLV is based on inadequate information from animal experiments, observation of obvious symptoms in workers and some "guessing inspired" by experience of similar substances. The industry do not do research to detect long-term risks from "small exposures". Most of them start marketing certain chemical without even their so called studies or research about TLV. *It is indisputable that ordinary working people is least healthy class because of their living condition.*

There is only a superficial knowledge of the toxicology of many substances, often what is known is based only on animal experiment. Many substances are cumulative - it get collected in the body for a period of years and you can not get rid of them. In many cases, scientists can only guess at the damage they do.

For this reason the TLV that appears at the end of many entries should not be taken as a guide to the level of risks. TLV's certainly can not be treated as safe limits. Don't be lulled into a false sense of security by high threshold values. All contact should be avoided - not just when it is convenient.

It is true that workers in many industries have force to accept danger as part of the job, and have become dependent on special payments for danger, dust, dirt and more recently noise. Generation of workers have been conned into pride in their ability to 'take' heat, cold, dust and overwork what it would be a lot 'tougher' to turn round and tell the employer to stuff her/his lousy conditions. Employers will expose worker to danger if it makes product cheaper and if they can get away with it. They can get away with it because the law implementation machinery is soft and not intended to prevent any fundamental challenge to profits at a risk of life of human being.

Toxicity is the inherent property of a chemical molecule to produce injury on reaching a susceptible site on or in an organism. Human beings, animals and plants are continually being exposed to various chemical pollutants in the environment.

All chemicals are/can be harmful; even the most innocuous of the substances when taken into the body in sufficient quantities, may lead to undesirable, if not distinctly harmful effects. It follows, therefore, that the degree/intensity of the injurious effects produced by a toxicant, is determined by two factors:

- (1) Concentration of the toxicant at the site of action.
- (2) Length of exposure of a susceptible site to the toxicant.

The former has given rise to the concept of 'dose' in experimental toxicology and the latter to the classification of exposures to toxicants as acute, sub acute/sub chronic and chronic types.

Several pollutants on single or repeated exposures affect various organs severely. These are known as the target organs. The organs affected primarily in a chemical toxicity with different chemical pollutants are listed below:

<u>Target Organs</u>	<u>Pollutants</u>
Bones/Teeth	Cadmium, Fluorides, Selenium
Liver	Brain Arsenic, Lead, Mercury
Lungs	Arsenic, Carbon tetrachloride, Mercury, Molybdenum, Selenium, Copper.
Kidney	Arsenic, Cadmium, Mercury
Blood	Arsenic, Mercury, Lead, Chloroform, Cadmium.
	Arsenic, Benzene, Cadmium, Fluorides, Lead, Mercury.

In chronic toxicity exposures to chemical pollutants are those that result from 90 or more days of or often a long-term continuous doses. In chronic exposure, the toxic signs/effects are rarely overt but the characteristic changes and symptoms observed in the target organs/systems with time. Most hazardous effects resulting from chronic exposures that concern human being are the carcinogenic, mutagenic, and teratogenic effects.

In the villages around the Vadodara industrial area has high incidences of Allergic Skin, Nasal, and respiratory problems, abnormality of lungs in the form of Emphysema, Blood circulatory disorders – high blood pressures observed in young people in the age group of 20s, high incidences of heart diseases -, common and frequent Gastrointestinal diseases due to hard water, and high incidence of Kidney and Renal Stones in the area – in some families all family members have suffered due to stone problem some time or other.

In this area it has been observed that newly weds have problem in getting issues so high number of couple has to go for special treatments. Some of the young males are having impotency problems also. The girls from this area married outside also have high incidences of miscarriage and fertility problems.

HEMA CHEMICALS:

This was a petition brought before the Indian People's Tribunal by Ram Kailash Saroj an affected worker in the manufacturing process. The company manufactures Potassium and Sodium Bichromate, basic Chromium sulphate and other chromium based chemicals used widely in making alloys and plating metal. The known hazards of chromium handling include lung cancer, deep and slow healing ulcers on skin and in the nose, nasal septum perforation and perforation of eardrums. While the company has refused to take any responsibility of the employees plight 43 workers have been found to be suffering from, nasal septum perforation andworkers have had to amputate their toes, have suffered from gangrene etc.

Right to Information:

While instances of the state acting against the interests of the common people repeat far too often it has fallen upon the victims and activists to fight to conserve natural resources, guard common property resources and fight for the right life and livelihood. The state has used its power to deny people the basic right to information. Where provisions of law do confer some right enforcement is a distant dream.

The Bhopal Tragedy led to amendment in the Factories Act. Under Section 41 of the said act Companies ought to give information on its, products, raw materials, their effects on human health, measures to be taken in case of disaster etc. Companies must give this information to the local people in the local language. There is wanton violation of the provision all over and the law enforcing agencies are too busy to act. This petition therefore tried to highlight this state of affairs.

These petitions were submitted before the Tribunal well in advance and sent to authorities concerned with dealing with the problems. They were requested to respond to the presentations either in writing or orally and also invited to make present their side on the day of the public hearing.

While we believe that (i) the Government's industry policy needs complete overhauling, (ii) people's should abjure the use of products that involve hazardous manufacturing processes and in the need for radical changes in the law all the demands and suggestions in the six petitions were within the framework of the existing law.

The tribunal split into two groups to visit all the affected areas on the 22nd and 23rd January 99. In addition, met the affected as the authorities responsible to act on these problems. The full Tribunal of 11 members then heard the six petitions and then called upon the concerned authorities to respond to the contentions of the petitions. Out of the 20 agencies and authorities cited in the six petitions two remained present and responded orally before the Tribunal.

Observations of the Tribunal: (based on field visits)

- The most serious and irreversible impact is that of contamination of ground water in all the areas visited from Vapi to Vadodara.
- The most visible and grossest violation of law is not acted upon.
- Authorities remain blissfully ignorant of the serious threats to public health arising out of existing state of affairs.
- People's livelihood is affected in large areas but the issue does not cause concern to the power that be.
- Affected people have neither access to information nor any avenue to convey their grievances.
- The most basic parameters such as acidity, BOD and COD levels of effluents are not controlled in a number of places.
- The state of affairs points not only violations of law but also a threat to the life and livelihood of people.

The final hearing in Baroda on 24th January 99 was attended by about 350 people and was well received by the Press. The presence of two respondents (high Govt. officials) at the public hearing is a sign that people's awareness can force them to act responsibly. We are also aware that other authorities - though they will not acknowledge - have to take note of the issues raised by Paryavaran Suraksha Samiti.

We will be happy to provide any further information on this and we hope to share with you the detailed report that will be published by the Indian People's Tribunal soon if you intimate us.

Rajnibhai Rohit
Trupti Swati Susheela
Virji Michael Anand Kanti Daniel