

## Union Carbide's secret disaster: the second poisoning of Bhopal



Factory under monsoon sky, photo: Alex Masi, July 12, 2011

This is the story of Union Carbide's second, secret, disaster in Bhopal: the slow leaking of very toxic wastes from the factory site and three huge 'solar evaporation ponds' into soil and groundwater. It's the story of Union Carbide's decision not to warn people, to deny that there was a problem and to maintain its silence even as people living nearby fell ill, children were born damaged and families its gases had decimated in 1984 were poisoned a second time.

Long before the gas there had been troubling rumours and mysterious deaths of livestock. In 1981 and again the following year, several cattle died after drinking from three huge lakes that Union Carbide had constructed in 1977 near its Bhopal factory.<sup>1</sup> The cowherds complained to the police.

**1990** Carbide denied that it was in any way to

blame and settled privately with the owners but unease continued to grow about the three 'lakes' and the Union Carbide factory. No one knew what went on in there. Carbide said it was making 'medicine for the fields'.<sup>2</sup>

'Some medicine', grumbled farmers who were discovering that land onto which Carbide's lakes overflowed suffered a drastic decline in fertility.

Two tubewells dug near the lakes had to be abandoned because their water smelled and tasted obnoxious.

Only on the horrific night of gas did people living near the factory realise how dangerous the place had always been. After 'that night' the plant was closed and locked up – still full of lethal wastes – as it remains to this day.

### "This water stinks!"

Bhavesb lives in Atal Ayub Nagar, a slim strip of housing sandwiched between Carbide's factory wall and the railway line. His family moved there in 1989 when he was six. There were no handpumps and fetching water meant a trek to the well in Shakti Nagar, half a mile to the south.

To remedy this problem, people in Atal Ayub Nagar clubbed together to install two handpumps – a decision that would soon return to haunt them. At first the water seemed okay. Then oily globules began appearing in it – if allowed to settle they would form a layer at the bottom of the

glass. The water acquired a faint smell, which grew gradually worse. It tasted oilier too, but these changes happened very slowly.

Bhavesb's family were startled when his grandmother, on a visit from her village, pronounced the water undrinkable. 'It stinks!' she said. The locals, who had got used to the water, didn't find it so bad. They had worse things to worry about, like the number of damaged babies being born in their small community.<sup>3</sup>

### A chemical waste dump

What the people of Atal Ayub Nagar didn't know, because no one had told them, was that just yards from their

Bhavesb, photo: Maude Dorr, 2007



Bhavesb's family lived yards from the Union Carbide factory and drank poisoned water.

homes on the other side of the factory wall, the soil was lethally poisoned.

### Carbide's secret tests

Between May and July of 1989, the year Bhavesh and his family moved into their new home, Carbide tested samples of soil and water taken from sites inside the factory, including pits just on the other side of the wall from Bhavesh's community.

Fish were placed in samples of groundwater and into water with which soil samples were mixed.

All the fish died instantly, there was 100% mortality. All the samples were discovered to be severely contaminated with naphthol (abdominal pain, convulsions, diarrhoea and vomiting); and naphthalene (anaemia, cataracts, retinal damage, liver and brain damage, and possibly cancer).<sup>4</sup>

Despite an obvious danger to people like Bhavesh's family, living just on the other side of the wall, Carbide issued no warning and kept the results to themselves. Atal Ayub Nagar and other communities near the factory remained completely unaware of the serious risk to their health and continued to

drink, wash in, and cook with, the poisoned water.

### Enter NEERI

In 1989 the State Pollution Control Board (MPPCB) decided to invite NEERI (the National Environmental and Engineering Research Institute) to make a study of soil and water drawn from sites in and around the three 'lakes'. (See pp. 86-87)

This, it was suggested, would be followed by a study of the factory site itself.

UCIL decided to conduct its own private tests in mid 1989 and when the

alarming results were known, acted on the advice of its US parent UCC (Union Carbide Corporation) and retained consultants Arthur D. Little to guide NEERI, which had little or no experience of the kind of work it was being asked to do.

NEERI's interim report on the 'lakes' was completed by early 1990. To Union Carbide's relief it stated that it had found no contamination.<sup>5</sup>

### BGIA tests confirm pollution

Early in 1990 the BGIA (Bhopal Group for Information & Action) asked the Bhopal State Research Laboratory to analyse soil and water from near the factory.

The reply was that anything connected with Union Carbide was highly sensitive and had to be cleared by top officials.

The BGIA decided to work with an independent laboratory. It despatched sediments from the lakes, soil taken from near the lakes and water from a local well for analysis at the Citizen's Environmental Laboratory in Boston, USA.

The sediment was discovered to be richly contaminated with pthalates, 1-naphthalene, benzene

and other aromatic hydrocarbons, plus organochlorides including di- and tri-chlorobenzenes.<sup>6</sup>

Members of the NTC (National Toxics Campaign) stunned UCC by unveiling the sensational results at the company's AGM, and on May 15 1990 the news broke in India.

### Carbide's public fury

Embarrassed by these revelations in front of its shareholders and media, Carbide lashed out at the BGIA and survivors' groups. Next day Carbide director Subimal Bose sent a furious letter to the state government (right).

Citing NEERI's interim report, he claimed there was 'no contamination of soil and ground water', described news reports as 'mischievous and designed to cause panic' and accused the BGIA and the survivors' groups of 'agitation'.<sup>7</sup>

Neither Bose nor anyone else at Union Carbide admitted that they had known for at least nine months that the factory was fatally contaminated.

### Carbide's private worries

For all its quoting of the NEERI report, Union Carbide knew that the BGIA/Citizens' Laboratory results were more in line with what it itself had found inside the factory grounds.

A confidential memo (left) written after the AGM reveals that Union Carbide reviewed its alarming 1989 tests amid worries that 'The matter has assumed significant importance in view of recent reports in local and national newspapers. The seriousness of the matter needs no elaboration.'<sup>8</sup>

It is from this same memo that we know of the tests, and the toxicity of the results.

Despite knowing what the toxins in the factory could do to the human body, the memo does not recommend warning the residents of Atal Ayub Nagar just outside its wall, but instead 'earnestly' urges that further studies be made 'primarily for our own understanding of the situation.'

### PRIVATE UNION CARBIDE MEMO, 1990

#### PRESENCE OF TOXIC INGREDIENTS IN SOIL/WATER SAMPLES INSIDE PLANT PREMISES

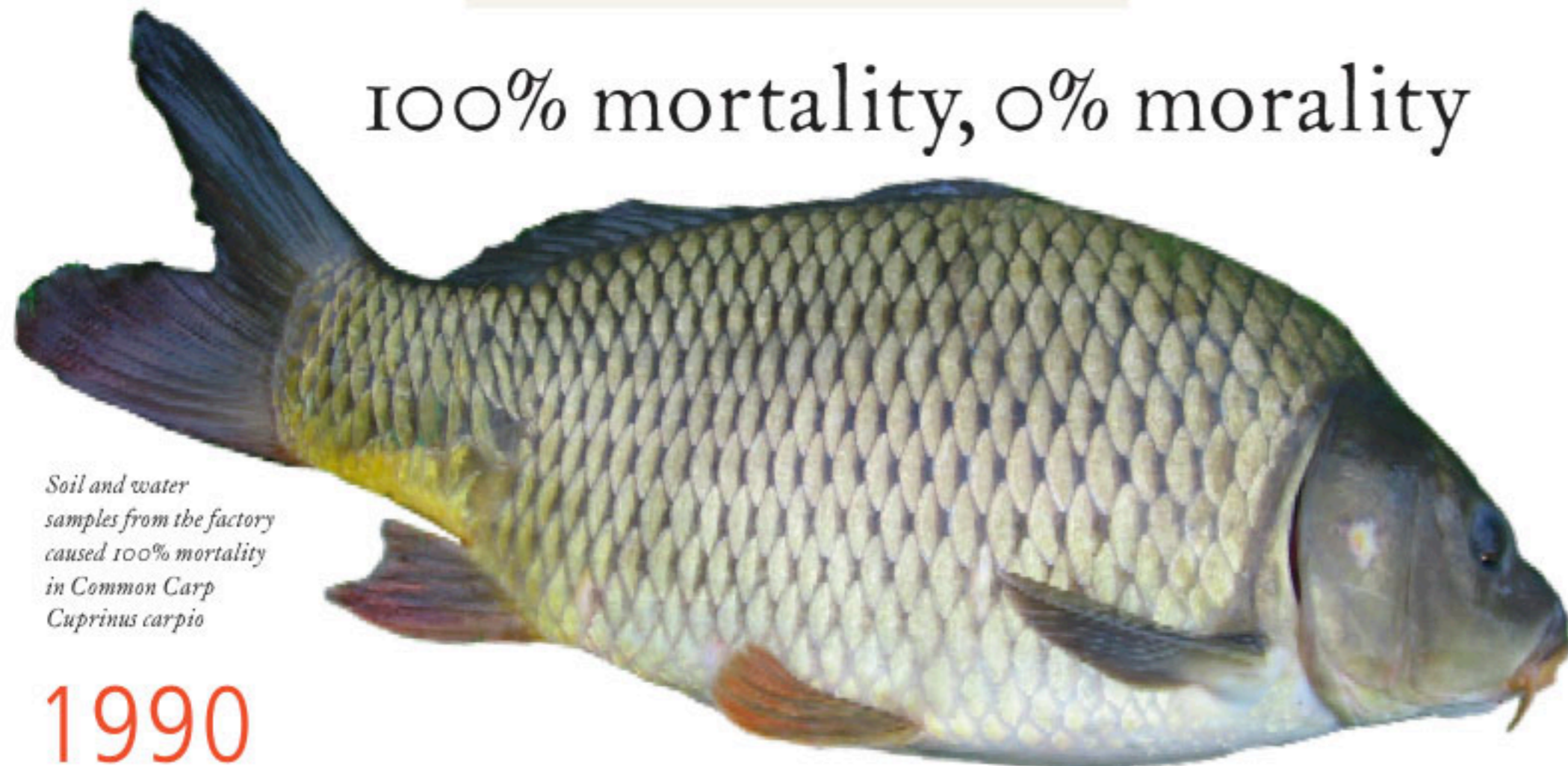
The matter has assumed significant importance in view of recent reports in local and national newspapers. The seriousness of the issue needs no elaboration. It is earnestly suggested that the subject be given due consideration and studies initiated without further delay. If the situation so requires, the work may be carried out primarily for our own understanding of the situation, in the light of the following paragraphs a summary of preliminary work carried out in 1989 is described.

#### 1. Analysis of samples drawn by plant personnel in June-July 1989.

Samples drawn in June-July '89 from land-fill areas and effluent treatment pits inside the plant were sent to E and B. They consisted of nine soil/solid samples and eight liquid samples. The solid samples had organic contamination varying from 10% to 100% and contained known ingredients like naphthol and naphthalene in substantial quantities.

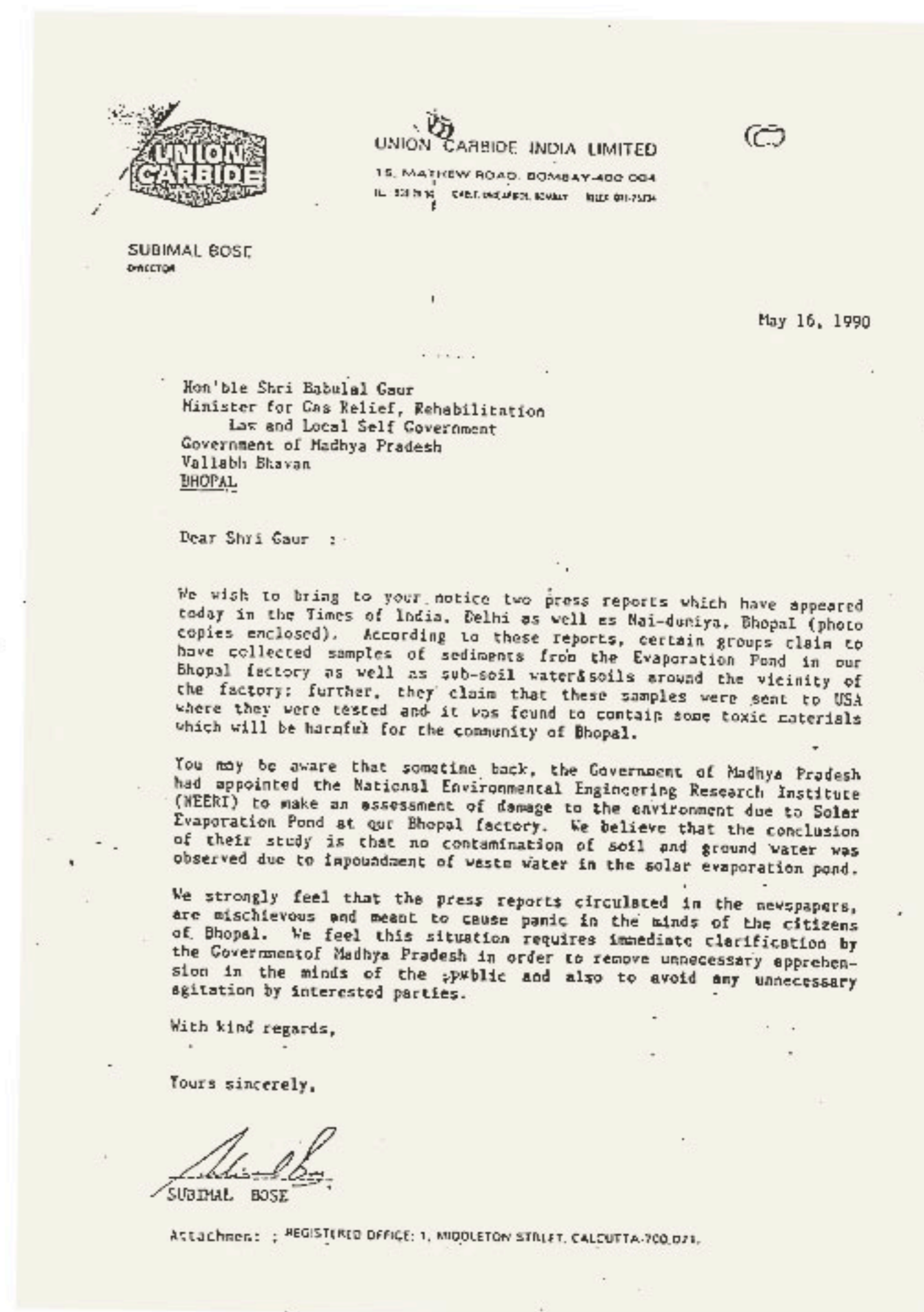
Majority of the liquid samples contained acetone and/or benzene in quantities far more than permitted by ISI for inland disposal. All samples caused 100% mortality to fish in toxicity assessment studies and were to be diluted several fold to render them suitable for survival of fish.

# 100% mortality, 0% morality



Soil and water samples from the factory caused 100% mortality in Common Carp *Cuprinus carpio*

# 1990



### Who to believe?

While the tests and contamination described in the 'secret memo' referred to sites within the factory grounds, the NEERI and BGIA/Citizens' Lab samples had been taken in and around the three 'lakes' whose nearest point was 400m north of the factory wall.

UCC (Union Carbide Corporation) executives in Danbury, Connecticut, were puzzled by the clear disparity between NEERI's finding that there was no contamination, and that of the BGIA/Citizen's Laboratory which reported a slew of toxic chemicals.

Referring to the embarrassment of

the AGM, Norm Gaines, UCC's head of Health, Safety & Environmental Research, wrote to colleagues that he had discussed the matter with analytic chemists in UCC's South Charleston research center and that 'so far we are at a loss to explain the differences between the NEERI results and the alleged three samples presented by the NTC [campaigners at the AGM].'

While stating that he did not know 'the exact sample and analytical protocols used by either group', Gaines went on to suggest that the NEERI study 'seems to implicitly clear the plant site itself.'<sup>8</sup>

It is hard to believe that Gaines did *not* know that Union Carbide's own tests showed unambiguously that the factory site was contaminated, but his comment shows that UCC's head of Health, Safety & Environmental Research saw a clear link between the environmental health of the factory and the condition of groundwater downstream of the site.

### The impact of the monsoon

In an affidavit given (in 1999) to the New York District Court, ex-factory worker T.R. Chouhan related how, between 1969-1984, huge quantities of pesticides, solvents, catalysts, by-products and other toxic wastes were routinely dumped in and around the site. Some were solid, some liquid, some gaseous, and correspondingly polluted soil, water and air.<sup>9</sup>

Carbide executives in Singapore Danbury and Bhopal planning the study to be overseen by Arthur D. Little defined as its main objective: 'to identify areas where the soil within the plant premises is contaminated and whether the contamination has caused pollution in the underground water resources.' The investigators rightly regarded this 'a matter of great concern in view of the environmental hazard potential associated with organic contaminants.'<sup>10</sup>

Still no warnings were issued.

### The squatters' wells

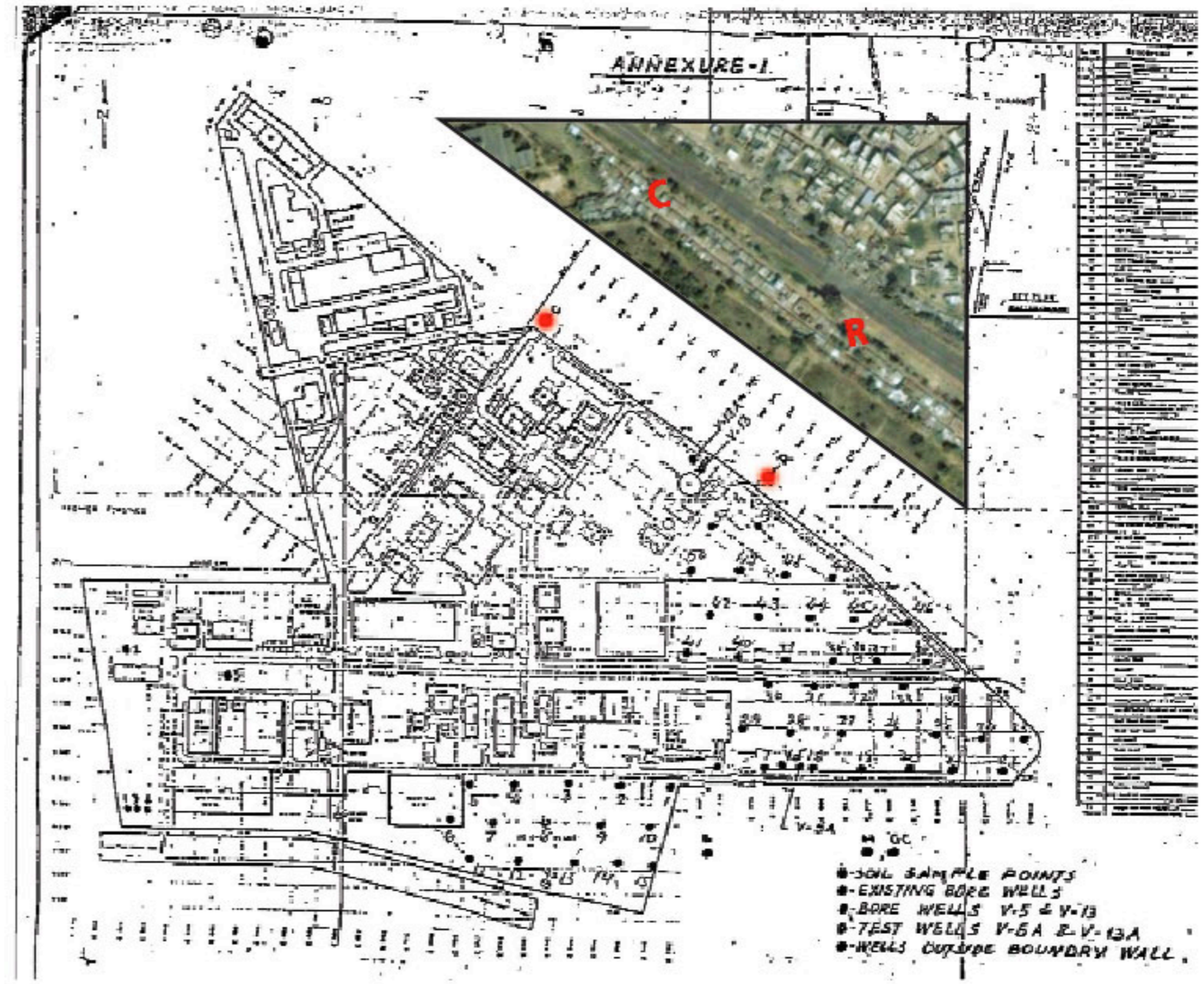
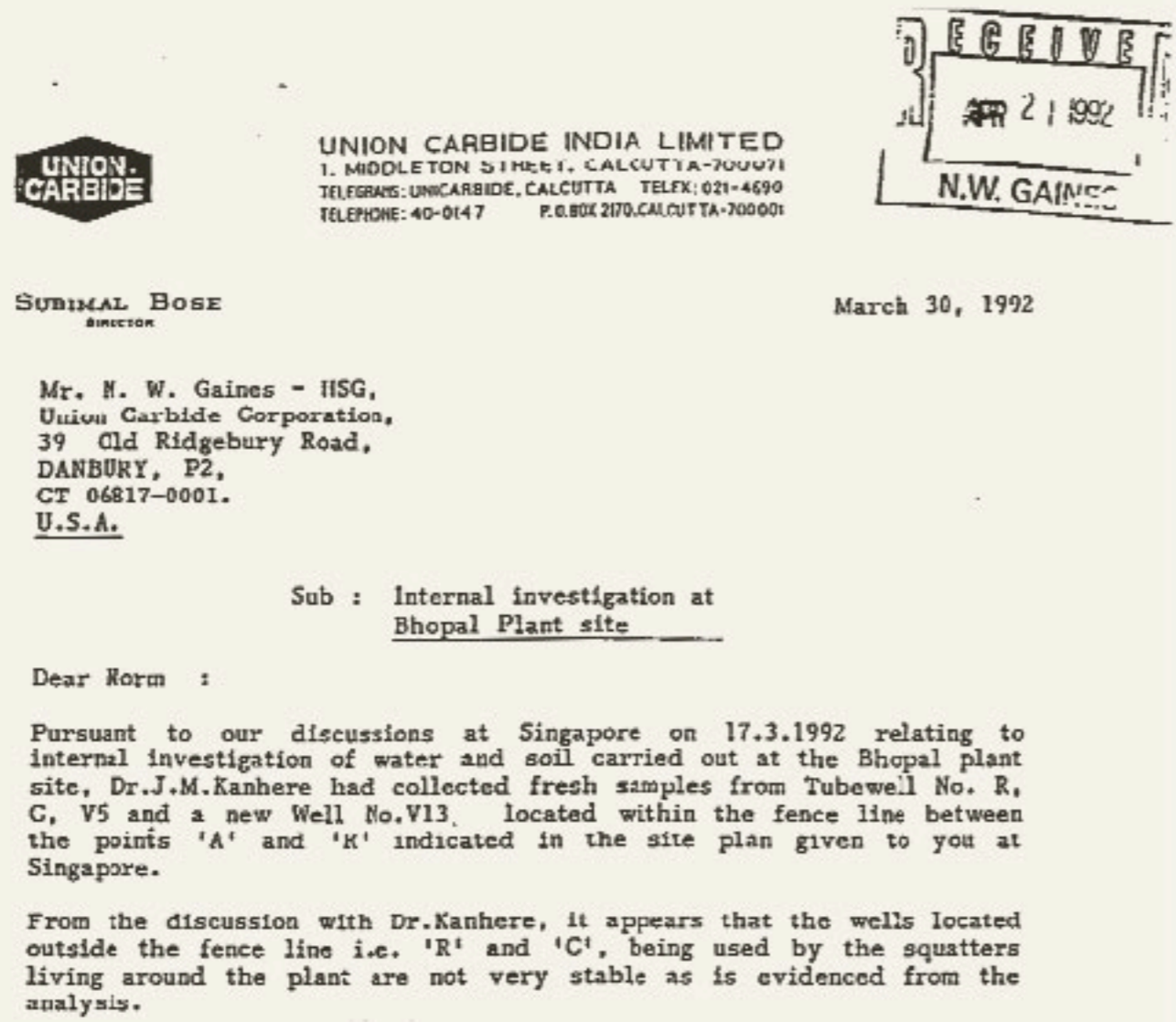
Bhavesh and his family had lived nearly three years in Atul Ayub Nagar when, in March 1992, Subimal Bose and Norm Gaines met in Singapore to discuss the factory site investigation.

In a follow-up letter (right), Bose dropped a bombshell: 'It appears that the wells located outside the fence line i.e. "R" and "C" being used by the squatters living around the plant are not very stable as is evidenced by the analysis.'

This is the first reference to real people drinking contaminated water, and the people summarily dismissed



August 2006



1992 Union Carbide map of the factory showing locations of "squatters' wells" C and R. The inset Google Earth image shows their positions in the Atul Ayub Nagar strip of housing between the factory wall and the railway line.

as 'squatters' were Bhavesh's and other poor families. The wells were the ones they had clubbed together to dig, whose water was by now in the process of turning 'undrinkable'.

### Rehana is born

Rehana lives near Bhavesh in Atal Ayub Nagar. She was born in 1997, without a left thumb, her growth is retarded. Her mind is weak and she hasn't the strength to go to school. Rehana's vision is not good, she's plagued by rashes and is constantly breathless.

Her dad sadly asks, 'Why was fate so cruel to our poor child?'

In December 2006, just before this picture of Rehana was taken, a team of doctors from Delhi was brought by the Chingari Trust to assess the problems of children in areas like Atal Ayub Nagar where the water is poisoned. They met children with cerebral palsy, deafness, eye problems, tumours, cleft lips and palates. Many had withered or malformed limbs. Some could not speak, but lay helplessly in their mothers' arms. (See pp. 169-170)



Rehana, 2007, photo Micha Patault



Andy Spyra Feb 2007



Andy Spyra Feb 2007

## Engineers warned of the danger to community water

In May 1972 engineers at Union Carbide's Technical Center in West Virginia were asked to design three huge 'solar evaporation ponds', into which tens of thousands of tons of organochlorines and other highly toxic wastes would be poured.

But when they began to examine the specifications and the site report the engineers grew deeply worried.

'I cannot believe,' wrote one, 'that we would be held blameless if we recognized potential problems here and did not speak up... a question can be raised as to whether the soil conditions at the site lend themselves to constructing ponds economically with completely impervious bottoms that would prevent seepage of the chloride into the ground waters and therefore into the community water supply. The essence of [the] proposed solution,' he candidly concludes, 'lies in the less advanced environmental

Against the advice of its own US design engineers Union Carbide built three 'solar evaporation ponds' into which they planned to dump dangerous organochloride wastes. All that prevented these chemicals from leaking into the groundwater was a plastic liner, flimsy as a dustbin bag. The photo (left) shows boys sitting on compacted waste above the remains of one such liner.

conscienceness [sic] in India.'<sup>13</sup>

The engineers warned that the proposed design risked the 'danger of polluting subsurface water supplies in the Bhopal area... New ponds will have to be constructed at 1 to 2-year intervals throughout the life of the project'.<sup>14</sup> They were not.

## Leaks okay to save money

In January 1977, a few days before a 'Revised Capital Budget Proposal' proposed sweeping cost cutting at the Bhopal factory, Carbide managers met contractors tasked with building the lakes. 'UCIL emphasised the need for reduction for (sic) cost of the pond as much as possible' and told the contractors that 'certain seepage/effluent from the pond can be accepted... provided there is corresponding reduction in the cost.'<sup>15</sup>

## Engineers' fears realised

Each monsoon the ponds became overflowing lakes and poured toxic sludges into the earth. The liners, never replaced, began to perish, and heavy metals and organochlorides drained out into the soil. The ponds' failure is attested in a panicky telex (below) dated March 25 1982<sup>16</sup> from

PHASE 11 EVAPORATION POND ALMOST EMPTIED. REPS OF KR DATEY AT SITE AND INVESTIGATION OF THE LEAKAGE IN PROGRESS. UNFORTUNATELY EMERGENCY POND HAS ALSO SHOWN SOME SIGNS OF LEAKAGE.

India to Union Carbide headquarters in Danbury. On April 10 the pond was still leaking and there was talk of repairs. But it is difficult to see how

AD: MIC UNIT WORKING SATISFACTORILY AFTER THE PROPOSED ANNUAL SHUTDOWN STOP. CONTINUED LEAKAGE FROM EVAPORATION POND CAUSING GREAT CONCERN. REPAIRS BEING PLANNED WITH ASSISTANCE FROM CONSULTANTS.

repairs could be carried out without

decanting the liquor from the two ponds and dredging out their beds of toxic sludge. There were three ponds in all, but with two of them almost emptied, there was nowhere for the contaminated water to go but into the ground.

The leakage began during the dry season. From June to October each year Bhopal receives heavy monsoon

rain with frequent flooding. That year in August alone the skies emptied more than half a metre of rain onto the city. It was a year of cattle deaths

near the lakes. Union Carbide denied liability and settled out of court.

## Denials continue

The company's denials continue to this day. People remained in the dark until 1999 when Greenpeace's report revealed the true extent of the mass poisoning of an innocent population.

Union Carbide could argue that the gas disaster had been an accident, but the water contamination surely was not. Union Carbide executives in India and the US not only ignored warnings that the 'lakes' would leak, but accepted leakage in order to cut costs. The company knew that its chemicals had travelled to public wells, but issued no warnings, and denied there was a problem.

They knew what these chemicals could do to human bodies, that many families likely to be drinking toxic water had been poisoned by their gases in 1984, and that now they were being poisoned a second time.

They had known the danger of constructing huge lakes full of toxic wastes, but went ahead and did it anyway



Andy Spyra Feb 2007