

BMA Sambhavna Bhopal Water Report **Strictly embargoed for release until December 1, 5.01am GMT**

EXECUTIVE SUMMARY. Analysis of Chemical Contaminants in Groundwater of Communities Surrounding UCIL Plant Site in Bhopal, India

Publication Date 1st December 2009

This report provides both a qualitative and a quantitative analysis of the drinking water supply situation in fifteen communities in close proximity to the Union Carbide India Ltd. (UCIL) pesticide plant site, scene of the World's worst industrial disaster, in Bhopal, India.

The data, contained within this report, proves that the groundwater aquifer, still used as a source of drinking water by many people, is contaminated with highly toxic chemicals. It provides information showing that these chemicals were used in the production processes of Sevin, carried out at the UCIL plant, and that there is no other possible source for the contaminants.

The report demonstrates this fact using a combination of new, previously un-published test data, from accredited laboratories in Switzerland, and the United Kingdom, alongside the collated results of previous tests carried out by: Greenpeace; NEERI; and SHRISTI.

The report also shows that concentrations of some of the toxins, found in the contaminated water, are still rising as the chemicals leach through the soil and into the aquifer. The most recent test sample, from June 2009, shows levels of Carbon Tetrachloride had increased by a factor of approximately 2.7 when compared to a previous sample taken from the same source in May 2008. This exceeds the World Health Organisation guidelines by over 2,400 times the safe level. Carbon Tetrachloride is a known carcinogen and was banned from consumer products in the US in 1970.

There are at least 15 other highly toxic chemicals, present in the drinking water samples tested in this report, at levels that greatly exceed the WHO safety guidelines. There are further chemicals present for which there are no safe guideline values.

Many of the chemicals found in the water supply are known, or suspected, carcinogens. They have potential neurotoxic properties and can cause damage to the body's organs. Many of them are especially harmful to children and fetuses. The areas surveyed shows, in studies carried out by the Sambhavna Clinic, very high rates of birth defects. A preliminary study suggests as many as one child in twenty-five is born with a congenital defect. Studies also now indicate rapidly rising cancer rates amongst many other chronic conditions.

This report also explains, using a detailed survey, that the clean drinking water supply system, installed by the Bhopal Municipal Corporation, does not supply sufficient drinking water and that many of the residents, in the areas surveyed, must resort to drinking the toxic groundwater to meet their needs. This is despite a Supreme Court of India ruling, from 2004, ordering that a safe water system must be supplied.

This report also calls into question the reliability of tests carried out by an Indian laboratory contracted to test the samples. During the process of preparing this report the authors have had very good reason to doubt the validity of results from tests carried out on their behalf by AES laboratories in Delhi.

The discrepancies, with the tests taken by AES, could be explained by technical problems, at AES laboratories. It is also possible that the laboratory did not wish to pass on the correct results,

thanks to the ongoing political controversy around the Bhopal disaster.

For the first stage of this report, twenty samples from different hand pumps, within the test area, were taken and sent to AES. Twenty duplicate samples were also taken and three of these were sent to an accredited laboratory in Switzerland.

Surprisingly, the chemical concentrations, in the AES tests, were all reported to be below detection limit. This was despite the fact that some of the samples clearly smelled of solvents. The authors called the results into question and now dismiss these findings.

The three duplicate samples sent to the lab in Switzerland showed various chemicals including some in extremely dangerous concentrations. These results back up the findings of previous tests by Greenpeace et al.

Then, in June 2009, one year after the original tests, a final single sample was collected, by the Bhopal Medical Appeal, and brought back to an accredited laboratory in the UK.

The sample was taken from the same source as one of the three tested by the Swiss lab in order to provide a comparative analysis, and the UK laboratory found the same chemicals. The UK laboratory did however find a higher level of chemical contamination, thereby suggesting that there may have been further ingress of the toxins into the aquifer over this period.

This report proves conclusively the presence of harmful toxic chemicals in the groundwater aquifer in proximity to the abandoned UCIL pesticide plant and the contamination can be shown to have emanated from the site.

The contaminants may have emanated from the factory site itself or from the 'solar evaporation ponds' just North of the factory site where UCIL are known to have dumped thousands of tons of toxic effluent or, most likely, from a combination of both.

The authors of this report state that it serves to counteract completely the recent statements, made by Bhopal Gas Tragedy Relief and Rehabilitation Minister Babulal Gaur, when he said: *"The plant is being opened to help people get rid of the apprehension and misconception that the chemical wastes lying in the factory are still harmful and are polluting the ground water of the nearby localities."*

We hope that the combined authority of our tests, along with the findings of others taken over the last decade' will dispel any such notion once and for all.

The Shristi report, from 2002 found that: *"Groundwater, vegetables and even breast milk is contaminated to various degrees by heavy metals like nickel, chromium, mercury and lead, volatile organic compounds (VOCs) like dichlorobenzene and haloorganics like dichloromethane and chloroform."*

Greenpeace describe the area as: *"A global toxic hotspot"*.

This report can only agree that the drinking water supply, in close proximity to the UCIL site, is inadequate in quantity and no less than a health hazard to human health. It is not only a shocking indictment of the intransigence of the authorities but also of the apparent lack of corporate accountability of the plant's owners.

**BMA, The Bhopal Medical Appeal is a UK based registered charity (Reg. No. 1117526)
The Sambhavna Trust Clinic, Bhopal, India is the only place that offers free treatment to sufferers of both the 1984 chemical gas disaster and the present day water poisoning.**