

# WATER CONTAMINATION

Incredibly, what happened on December 3rd is only one part of the ongoing chemical disaster in Bhopal. Today, a long list of toxic chemicals created and used in Union Carbide's pesticide formulation process lurk in the water, soil, and living organisms around the factory.



The vast majority of the more than 20,000 people living in communities that surround the abandoned Union Carbide plant and solar evaporation ponds rely on groundwater for all of their domestic water uses, including drinking. A 2001-2003 survey in Annu Nagar (pop. 1528) found that 91% of the households interviewed use contaminated hand pumps to supply drink water. Mercury, heavy metals, and VOCs appeared at dangerously high levels in the water samples the study analyzed. Thus, these communities continue to be poisoned by Union Carbide's dirty legacy in Bhopal through the extensive groundwater contamination.

A series of health camps were organized by the Sambhavna Trust Clinic from July 15, 2000 onwards at Atal-Ayub Nagar. Of the 240 persons reporting to the health camps, 181 [75%] were

tested for Haemoglobin content in their blood. It was found that only 5 % of the persons examined had normal values. That is 40% less than than the national average for India.

**Abdominal pain, skin lesions, dizziness, constipation, indigestion, burning sensations in chest and stomach, skin discoloration, suppression of lactation, underweight births, birth defects, child growth retardation, and contaminated breast milk** are only a handful of the chronic health problems linked to the ingestion of contaminated water in the neighborhoods surrounding the old Union Carbide Factory in Bhopal.

Survivors' organizations have been calling for an official assessment of the damage to environment and human health wrought by Union Carbide so that Union Carbide and Dow Chemical can be asked to pay for the costs of medical and environmental rehabilitation and supply of safe drinking water to the affected communities.

## The Poison is Spreading

In 1984, wind carried the toxic MIC gas south. Today the geological slant of the water table carries toxins in the groundwater to communities north of the plant. Contaminants, such as heavy metals and VOCs, are found in greater concentration closer to the plant, however, underground toxic plumes can travel between 300 and 700 meters per year. Slow and steady movement through the water table has carried contaminants as far north as Shiv Nagar, which is 3 km away from the factory.

## From Water to Food and Breast Milk

A study carried out by the Fact Finding Mission on Bhopal of 1999-2004 found bioaccumulation of toxins in vegetables and breast milk. Lead, Mercury, Nickel, VOCs, HCH (BCH) pesticide, and halo-organic compounds were found in soil, water, vegetables and breast milk samples from ten residential sites close to the plant. Tests at IIT Kanpur Laboratory have confirmed that breast milk of mothers in these communities carries toxic chemicals and heavy metals in high concentrations. Based on projections of the Sambhavna survey of Annu Nagar mentioned earlier, over 1400 children in the water-contamination affected population are under two years at least half of who are potentially nursing on contaminated breast milk. These toxins are also known to depress the developing immune system, making the infant vulnerable to different infectious and non-infectious diseases. Even low dosage toxicity can lead to endocrine disruption and hormonal malfunctions, effects of which may only emerge at puberty.

## Little Research on Health Effects

A small study on body burden (presence of chemicals in the bloodstream) was done by the National Institute of Occupational Health. No results have been published, however, even though it has been over a year since samples were collected. A small scale epidemiological survey done in 2004 by the Madhya Pradesh Government's Center for Rehabilitation Studies found that residents of communities affected by groundwater



contamination have higher prevalence of diseases in the skin and the respiratory and gastrointestinal systems.

### **The Next Generation**

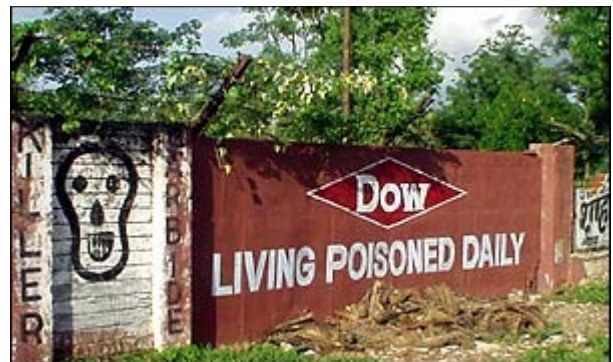
Many of the chemicals found in the ground water are known to cause developmental problems. Predictably, too many children in the affected communities are born with congenital abnormalities and growth retardation.

### **No Compensation**

There has been absolutely no compensation whatsoever for the the thousands upon thousands of people suffering from dire and painful health problems from the water contaminated by Union Carbide / Dow Chemical.

### **What Needs To Be Done**

1. Assessment of damages caused to workers and neighbourhood residents due to exposure to toxic dust and to the local environment as a result of mishandling of hazardous material within the abandoned Union Carbide factory premises between May 31, 2005 to June 22, 2005.
2. Scientific assessment of the nature of contaminants in the ground water at different depths up to at least 100 meters and at least up to 3 kilometers from the factory and Solar Evaporation Ponds. Assessment of the rate of spread of pollution plume, and the distance beyond 3 km to which the pollution may have spread.
3. Geological and hydro-geological mapping of the land up to at least 100 meters depth and at least up to 3 kilometers from the factory and Solar Evaporation Ponds.
4. Scientific assessment of the concentration and toxicity of chemicals and chemical waste on the surface and at different depths within the Union Carbide factory premises.
5. Epidemiological studies to determine both actual and potential health damages caused to the residents and their unborn children as a result of exposure to contaminated ground water and soil in the neighbourhood of the Union Carbide factory.
6. A baseline study before starting the remediation process to establish parameters that can be monitored during and after remediation to assess the quality and efficacy of the remediation operations.
7. Initiation of a new programme to systematically and thoroughly identify and compensate all victims of water contamination from the Union Carbide / Dow Chemical factory, and extraction of compensation money from Union Carbide and Dow Chemical.



**WE DEMAND that a National Commission on Bhopal be set up with all of the authority and funding necessary to ensure scientific assessment of the depth and spread of ground water contamination and epidemiological study of exposure-induced diseases, and that all victims of water contamination in Bhopal are identified and compensated by Union Carbide and Dow Chemical.**

**This padyatra is our march for justice and dignity. We shall struggle until our last breath.  
21 years is enough!**

*Bhopal Gas Peedit Mahila Stationery Karmachari Sangh +91 755 93031 32959 • Bhopal Gas Peedit Mahila Purush Sangharsh Morcha +91 755 93290 26319 • Bhopal Group for Information and Action +91 755 98261 67369  
Bhopal ki Aawaaz +91 755 98261 82226 • [www.bhopal.net/march](http://www.bhopal.net/march)*