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## **Contamination of Union Carbide factory site remains a threat for Bhopal: CSE**

By Pervez Bari, TwoCircles.net,

Bhopal: The survivors of Bhopal gas tragedy, the world's worst industrial disaster, and others even three decades after it was shut down, the Union Carbide pesticide factory, which caused mayhem in Bhopal, continue to be a real danger to the people of the city.

Almost every study done to measure the impact of the waste dumped within and outside the site by Union Carbide India Limited, (UCIL), has come up with one conclusion there is large-scale contamination in the soil and water of the area where the factory is located.

Findings of toxic waste in and around Union Carbide pesticide factory being released in Bhopal.

In the first initiative of its kind, ***New Delhi-based research and advocacy body Centre for Science and Environment, (CSE)***, which has analysed all the studies and their conclusions, released the key findings of its analysis here at Bhopal at a media briefing. It also released a comprehensive action plan for ridding the site of this contamination.

Between 1969 and 1984, UCIL had produced carbamate pesticides and organo-chlorine formulations. All these years, the toxic wastes and products were being dumped at several locations inside the plant and in the solar evaporation pond (SEP) outside. After the plant was shut down in 1984, this highly toxic waste was left lying on the plant premises and SEP.

Chandra Bhushan, CSE's Deputy Director General and the head of the Centre's lab which conducted one of the studies, releasing the key findings said : "Over the years, this waste has been a continuous source of soil and groundwater contamination and therefore, a cause of serious public health concern for residents in the surrounding areas."

Dilapidated plant machinery, 2009.

Bhushan revealed that CSE has analysed about 15 studies conducted over the last 20 years to assess soil and groundwater contamination in and around the UCIL site. These studies were conducted by several non-government organisations, Madhya Pradesh state agencies, the Central Pollution Control Board, (CPCB), and Council of Scientific & Industrial Research, (CSIR), institutes such as the National Environmental Engineering Research Institute, (NEERI), the National Geophysical Research Institute, (NGRI), the Indian Institute of Chemical Technology, (IICT), and the Indian Institute of Toxicology Research, (IITR).

While Amit Khurana, programme manager, food safety and toxins programme of CSE said: "Most of these studies confirm contamination and have more convergence than divergence. The nature of contaminants found in the soil and the place from where they were found are similar in several studies. Contamination of groundwater has also been reported in most studies."

It may be mentioned here that on April 25-26, CSE had organised a stakeholders' round table on this subject in New Delhi that focused on developing a road map on remediation of soil and groundwater, disposal of toxic chemical waste, remediation of plant machinery and the fate of the site. Deliberations lasting two days, involved expert representatives from scientific institutions such as NEERI, IITR, IICT, NGRI, IIT-Bombay, IIT-Kharagpur, IIT-Madras and IIT-Roorkee; regulatory bodies such as CPCB; industry including those with expertise in remediation of contaminated sites; and organisations from Bhopal.

The expert group concluded that 350 tonnes of stored waste is a small part of the total waste that is still dumped at the site and the SEP area. However, contrary to the official estimate of the waste at the site is 350 tonnes, many put the number at close to 20,000 tonnes. The bigger challenge is to decontaminate the soil and groundwater.

Bhushan said that for the first time, such a discussion was held in which all the stakeholders sat amicably across the table and participated actively.

Solar Evaporation Pond (SEP) area, 2009.

It may be noted here that Central Government representatives actively participated in the deliberations but no representative from the Bharatiya Janata Party, (BJP), ruled Madhya Pradesh Government turned up to take part in the deliberations while giving false assurances to do so. The CSE had repeatedly for three months urged the Madhya Pradesh Government to send officials to the round table meet and kept pursuing their participation till the end. This is quite intriguing as it is the M.P. Government which is the implementing agency to take up the clean-up issue of the toxic waste of the erstwhile Union Carbide factory in Bhopal.

#### ACTION PLAN:

The expert group came to a consensus and has suggested a range of measures for remediation and waste disposal. Based on the criticality and required time-frame for implementation, the measures have been divided into two sections – immediate and medium/long-term.

Under immediate measures, the expert group suggested: (i) Securing the site and SEP area by fencing and guarding to prevent access of people, especially children, hence their exposure to toxic chemicals; stopping construction in the SEP area; and protecting annual surface water runoff from the site during monsoon – Within three months; (ii) Excavation and recovery of all the waste from the site; Characterisation and inventorisation of the collected waste for proper treatment and disposal – After monsoon within three months and (iii) Characterisation of the 350 tonne wastes that is stored at the site and the results to be shared in the public domain. Under the supervision of the CPCB and affected community, incinerable waste is to be incinerated after the stabilisation of the trial results at Pithampur – Three to six months.

Children at the UCIL site, 2009.

Medium and long-term measures include: (i) Groundwater contamination assessment through detailed field investigation and lab analysis to develop a remediation plan. Possibility of hydraulic containment is to be explored as an interim containment measure – Six months to One year; (ii) Characterisation and remediation of the waste dumped in SEP area, particularly the landfill to prevent continued contamination of the groundwater in the local area – Two to three years; (iii) Detoxification, dismantling and decommissioning of the plant after preserving structures such as MIC plant including the vent, vent scrubber, storage tanks and control room – Two years and (iv) Remediation of the UCIL site that involves building a memorial and centre of excellence for industrial disaster management after decontaminating the site – Five to six years.

Chandra Bhushan said: “The action plan is implementable and is developed out of the consensus within the expert group. It was widely agreed that this is high time to break the existing institutional logjam and the government of Madhya Pradesh should swiftly act and solve this public health concern of huge significance.”

Meanwhile, the factory site reeks of chemicals and ground water around the factory is contaminated with heavy metals said to be carcinogenic. The solar evaporation ponds developed on leased private land — now given back to locals — has houses coming up. The

open contaminated grasslands are grazing grounds for goats of thousands of people living around the depilated boundary walls of the factory.

Abdul Jabbar, convenor Bhopal Gas Peedit Mahila Udyog Sanghathan, who had been fighting for Bhopal victims since 1984, described the difficult lives of locals and blamed the government for failing to act. Many blame activists like them for delay as they want Dow Chemicals, now owner of Union Carbide to pay for remediation. The issue is being debated in the Supreme Court as the department of chemicals has earmarked Rs.310 crore for the same.

Bhopal waste disposal timeline:

1969 -- Union Carbide factory starts; 1973 -- first report of soil contamination; 1982 -- a telex send from Union Carbide Bhopal about water contamination in nearby areas; 1984 -- days before the gas leak technical issues were raised but ignored; 1990 -- An American lab confirmed contamination of ground water; 2004 – Union Chemicals ministry Rs.100 crore for remediation; 2005 --- A private firm collected 350 tonnes of waste and kept in a warehouse in Union Carbide factory.

In last eight years, the government considered various options including transportation to Germany but has failed to find an answer.

It may be recalled here that on the intervening night of December 2-3, 1984 Union Carbide pesticide manufacturing factory had spewed poisonous Methyl Iso-cyanate gas whereby 3000 people had perished virtually instantly and over the years more than 25000 have kissed death and the sad saga is still continuing uninterruptedly. About half a million are suffering from the side effects of the poisonous gas and several thousand people have been maimed for life.