



**ELAW**

Environmental Law Alliance Worldwide

TO: Nityanand Jayaraman, Community Environmental Monitoring  
FROM: Mark Chernaik, ELAW  
DATE: June 3rd, 2011

**RE: Interpretation of water quality data near the Chemplast facility in Mettur**

Dear Mr. Jayaraman,

You provided for my interpretation a laboratory report on pollutant levels in a sample of water that was collected on May 4th, 2011.

According to information you provided, this sample was collected from a stormwater drain that runs alongside the Chemplast PVC manufacturing facility in Mettur operated by Chemplast Sanmar Limited (Chemplast). It had rained the previous night (May 3rd, 2011). Water was seeping out from beneath the compound wall and running along the wall to enter a public canal that runs along villages and densely populated settlements to reach the River Kaveri. This canal joins the River Kaveri upstream of several drinking water intakes.

In the attached spreadsheet, I compare levels of six pollutants (mercury, ethylene dichloride, bis(2-chloroethyl) ether, chloroform, 1,1,2-trichloroethane and methylene chloride) detected in the water sample to relevant environmental standards.

See: [Interpretation of effluent quality data \(3 June 2011\).pdf](#)

It is my understanding that since 2008, Chemplast has claimed that the PVC manufacturing facility in Mettur achieves Zero Liquid Discharge (ZLD). The pollutant levels in the sample of water that was collected on May 4th, 2011 clearly show that this claim is false. For example, the pollutant found at the highest concentration in the water sample is ethylene dichloride, which was found at a level of 4000 micrograms per liter (ug/L). Ethylene dichloride is mainly used as a raw material for the production of vinyl chloride monomer, a major precursor for polyvinyl chloride (PVC). Chemplast manufactures and uses ethylene dichloride in its PVC manufacturing facility in Mettur. Finding this high concentration of ethylene dichloride in a water sample just outside of the Chemplast PVC manufacturing facility in Mettur is entirely inconsistent with the claim that this facility achieves Zero Liquid Discharge.

The concentrations of pollutants in the sample exceed those permitted by the U.S. EPA for PVC manufacturing facilities. Under 40 CFR Part 414 - Organic Chemicals, Plastics, and Synthetic Fibers - Subpart J— Direct Discharge Point Sources That Do Not Use End-of-Pipe Biological Treatment, the U.S. EPA does not permit PVC manufacturing facilities that do not use end-of-

pipe biological treatment to discharge effluent containing more than 374 ug/L of ethylene dichloride on a daily basis, and 180 ug/L of ethylene dichloride on a monthly basis. See the attached Spreadsheet. I have reviewed the effluent treatment system used at the Chemplast PVC manufacturing facility in Mettur, and conclude that this system does not use end-of-pipe biological treatment.<sup>1</sup> Therefore, the level of ethylene dichloride in the discharge from the Chemplast PVC manufacturing facility in Mettur is more than 10 times what the U.S. EPA permits on a daily basis and more than 20 times what the EPA permits on a monthly basis. The level of 1,1,2-trichloroethane in the discharge from the Chemplast PVC manufacturing facility in Mettur exceeds what the U.S. EPA permits on a monthly basis.

The pollutant levels in the sample of water that was collected on May 4th, 2011 are also relevant to the health of persons who consume water or fish from surface waters that this discharge enters into. Ethylene dichloride, bis(2-chloroethyl) ether, chloroform, 1,1,2-trichloroethane and methylene chloride are all potent toxins, with the potential to cause a variety of adverse health effects, including cancer. The levels of ethylene dichloride, bis(2-chloroethyl) ether, chloroform, 1,1,2-trichloroethane in the discharge are all 10 to 10,000 times higher than the U.S. EPA criteria for protection of human health for consumption of fish and drinking water. For example, the level of ethylene dichloride in the discharge is more than 10,000 times higher than the U.S. EPA criteria for surface waters that are source of fish and drinking water; and more than 100 times higher than the U.S. EPA criteria for surface waters that are source of only fish. Even if this discharge were substantially diluted, downstream surface waters may have concentrations of pollutants that are a risk to persons who use these waters as a source of fish or drinking water.

Sincerely,

Mark Chernaik, Ph.D.

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<sup>1</sup> Chemplast, Mettur India, Selects HEROTM + ZLD.  
[http://www.aquatech.com/casestudy/%2361%20Chemplast%20Mettur%20%28HERO%20ZLD%29\\_20100607204820.pdf](http://www.aquatech.com/casestudy/%2361%20Chemplast%20Mettur%20%28HERO%20ZLD%29_20100607204820.pdf)