

MERCURY POLLUTION IN THE SEDIMENTS OF VEMBANAD WETLAND: A CHRONOLOGICAL APPROACH

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Executive summary

The present study assessed the content of total mercury and organic mercury in the surface sediments and core sediments of Vembanad lake. The results showed that the northern part of the lake was more contaminated with mercury than the southern part. The mercury concentration was relatively high in the subsurface sediment samples, indicating the possibility of historic industrial mercury deposition. A decreasing trend in the mercury level towards the surface in the core sediment was also observed. The geochemical parameters were also analysed to understand the sediment mercury chemistry. Anoxic conditions, pH and organic carbon, sulphur and Fe determined the presence of various species of mercury in the sediments of Vembanad Lake. Presence of methyl mercury has also been observed. It indicates the mercury methylation capacity of the sediments and is highly potential for bioaccumulation and magnification mercury in the sediments. The pollution profile showed that mercury content has been increased along with the sedimentation and it reached maximum during the year 2004 and has shown a decreasing trend after that. The major source of mercury was a chloralkali industry. They have changed their processing technology since 2004 and hence there is a decrease in mercury accumulation. However, historically deposited mercury is still in the sediments and will cause environmental impacts if there any perturbations occur. Along with mercury other metals also have shown the same trends in the sediment. More studies are to be required to understand transformation and transportation of mercury and other metals in the lake.

Papers published/under review in peer reviewed journals

Mahesh Mohan, MS Shylesh Chandran, KK Jayasooryan, EV Ramasamy. (2014). Mercury in the sediments of Vembanad Lake, Western Coast of India. Environmental Monitoring and Assessment. 186:3321–3336 Springer. DOI 10.1007/s10661-014-3620-1

Mohanachandran Nair Shylesh-Chandran, **Mahesh Mohan**, Eswara Venkatesaperumal Ramasamy, Sreelakshmi Unnikrishnan, Gouri G Pandit, Mahesh Tiwari, Sanjay Kumar Sahu, Rahul C Bhangare, Kannan Mohan. The historical trend in trace metal enrichment in core sediments from Cochin Estuary, Southwest coast of India. Submitted to Environmental Nanotechnology Monitoring and Management, Elsevier (accepted, 16 December 2018).

Papers presented

C M S Shylesh, **M Mahesh** and E V Ramasamy.(2013). Distribution of mercury in core sediments of a tropical estuary- west coast of India. National Conference on heavy metals in the environment (HME 2013), Kottayam, Kerala