Geophysical Research Abstracts
Vol. 16, EGU2014-10995, 2014
EGU General Assembly 2014

Monitoring of Pb Contamination in Loire Estuary: Trends, Distribution and Isotopic composition

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The Loire River is one of the largest river systems in Western Europe and constitutes a major continental input to marine environment in the Bay of Biscay. Its catchment area flows through agricultural, industrial areas and through a more and more urbanized estuary. Even if Loire River is not considered as a highly polluted system, some studies identified a Pb contamination of its estuary due to industrial inputs and combustion of leaded gasoline up to the mid 90's. A retrospective study, based on the analysis (Pb contents and isotopic composition) of Mytilus edulis samples collected by the French mussel watch program (RNO/ROCCH) has highlighted this contamination and its trend between 1985-2005 (Couture et al., 2010).

This poster will first complete the work initiated by Couture et al. Pb contents and isotopic signatures in mussel samples collected by RNO/ROCCH over the last 10 years will be presented and discussed. Results will be compared to measurements performed on various environmental samples (sediment, biota…) collected in the frame of the environmental monitoring project RS2E started in 2012 by the "Observatoire des Sciences de l'Univers Nantes-Atlantique" (OSUNA). This new data will contribute to a better characterisation of Pb contents and distribution along the Loire Estuary. Moreover, some key samples will be submitted to HR-ICP-MS for Pb isotopic analysis. Discrimination of anthropic Pb sources requires both precise and accurate isotope ratio determination and also high versatility due to the complex matrix, which is typical for marine and estuarine samples. These measurements will contribute to a more accurate definition and characterisation of main actual anthropic Pb sources (urban, agricultural, industrial or atmospheric deposition).

Couture R.- M., Chiffoleau J.-F., Auger D., Claisse D., Gobeil C. and Cossa D. (2010) Seasonal and decadal variation in lead sources to eastern north Atlantic mussels. Environ. Sci. Technol. 44, 1211-1216.