

Recent developments in the ICPR sediment management activities in the Rhine basin

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Introduction: Since two years an ICPR expert group elaborates a comprehensive strategy for sediment management in the Rhine basin. Main objectives are a sediment management plan for contaminated sediments addressed to competent authorities in the watersheds for implementation in measure programs according to WFD and the “improvement of sediment quality in order to relocate dredged material without harm” (Art. 3 of the ICPR Rhine Convention).

The group consists of experts from the countries CH, D, F and NL. Water management authorities, waterways and shipping directorates, environment ministries and scientific institutes are involved.

Methods: The mandate of the ICPR expert group covers three points: 1) Draft a management plan for contaminated sediment. This includes an inventory of relevant sediment studies so far, the determination of the extent of pollution and the quantity of polluted sediments, the assessment and classification of sediments according to their risk potential, and proposals for an economically and ecologically acceptable handling of sediments of different classes. 2) Peripheral conditions to be taken into account. These are national regulations as well as international recommendations and strategies for action aimed at the management of sediments and dredged material handled in the Rhine basin so far. 3) A survey of hot spots including priority action has to be provided.

Results: The inventory of polluted sites resulted in the identification of a focal point at selected Upper Rhine barrages, which is connected with historical sediment contamination of hexachlorobenzene (HCB). Fig. 1 shows HCB content of sediments in a depth of 0-1,2 m. The results are taken from an ICPR research project which was conducted in the years 2000-2003. Further investigations prove, that especially in the head-waters of the Marckolsheim and Rhinau barrages sediment contamination is a source for ongoing pollution downstream.

Barrage	Average Value in µg/kg	Maximum Value in µg/kg
Iffezheim	131	650
Gambsheim	128	400
Strasbourg	223	2300
Gerstheim	135	1500
Marckolsheim	609	4100

Fig. 1: Hexachlorobenzene concentrations of sediments in barrages of the Upper Rhine

The SedNet recommendations and a study of contaminant situation along the rivers Rhine [1] with the tree steps approach were adopted in a concept for a rule-based evaluation:

- Identification and classification of pollutants that are relevant in the watershed
- Identification and classification of areas with an increased pollution load
- Identification and classification of areas of risk

The risk of remobilization of polluted sediments is assessed by comparison of critical shear stress of the sediments with shear stress at high flood HQ_X or by adequate flood event investigations.

For each site a reference sheet had been designed with the following information:

- Summary of Data
- Risk assessment
- National legislative framework
- Recommendations of measures in the Rhine basin management plans.

In a further chapter the potential of remobilization and the uncertainty of data with regard to the level of pollution, the amount of polluted sediment, and the level of remobilization is discussed.

References: [1] *Inventory of historical contaminated sediment in Rhine basin and its tributaries. Final Report*, TU Hamburg-Harburg. October 2004