Reno river, Northern Italy: geochemical composition of water and suspended river sediments

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The preliminary results aimed to defining the environmental conditions of the hydrographic basin and based on geochemical and hydrological methods are presented. The discussed case study is represented by the Reno river, northern Italy, where its environmental conditions are initially determined with a analysis of lithological, hydrological and land use of the watersheds of the hydrographic basin, integrated with granulometric composition and geochemical analysis of the solid suspended material and of the water, during extreme flow events, in 8 monitoring stations. Additionally, a geochemical monitoring has been carried out for two of the major hydrographic sub-basins: a) Lavino river, with areal extension of 82, 6 km^2 and mean annual discharge of 0.62 m^3/s (period 1998-2004) and b) Savena river, with areal extension of 168, 9 km^2 and mean annual discharge of 2.8 m^3/s (period 2000-2004).

In particular, the chemical analysis of the collected solid material by means of an X-rays method and of the waters by means of ICP-MS standard procedures allowed to define i) the principal mean concentrations of both water and sediments and their comparison with the Italian and European legislative limits; ii) the variations in ionic concentration of both sediments and water, therefore enabling to infer the degree of erodibility of the rocks outcropping within the hydrographic basins, their relation with the amount of precipitation and corrivation times of the water at the monitoring sections; iii) the present-day background values of the principal chemical elements.

Automated domestic online monitor of water pollution

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The principle of working of conducting plates is used in the paper. When the conducting plates are ON, the conducting media, water conducts, and the different ions present in the water are responsible for conductivity. The other constraint is temperature as conductivity depends on it, hence RTD is used for temperature sensing and thus equivalent voltage is obtained. These voltages are given to the microprocessor which on processing gives the required result.

The model can be divided into three basic parts: Conducting plates, RTD and Micro-processor

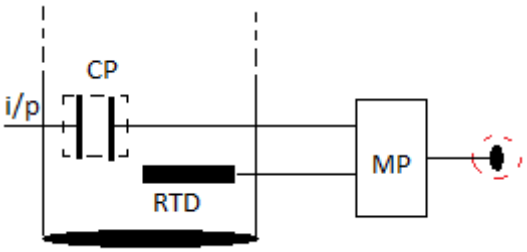

Figure 1: Block Diagram.

Water quality	Conductivity range (S/m)
Excellent quality	5.5×10^{-5} to 0.046
Good quality	0.046 to 0.141
Poor quality	0.141 to 0.188

Table 1: The conductivities of water at different qualities

From the table given above, the quality of water is decided based on the conductivity values. The quality poor imply that, by consuming water of this quality for a considerable period of time it may cause health problems [1], [2]. Thus the water quality is being observed periodically to avoid health hazards.

[1] http://www.laleva.cc/environment/water.html [2] http://www.who.int/household_water/en/