

STRATEGOS *Technical Workshop*

Design of Water using Networks of Multiple Contaminants with concentration potential Concepts

10.00-12.30, October 28th, 2019, Aula DIME MIG, via Opera Pia 15, Genova

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Water is a main Strategic Resource that is supposed to turn critical in next years. Indeed the introduction of regeneration recycling unit can significantly reduce freshwater consumption and consequently reduce wastewater discharge of water-using systems. Therefore is crucial to evaluate the influences of the regenerated concentrations of contaminants on regenerated streams

Workshop Description:

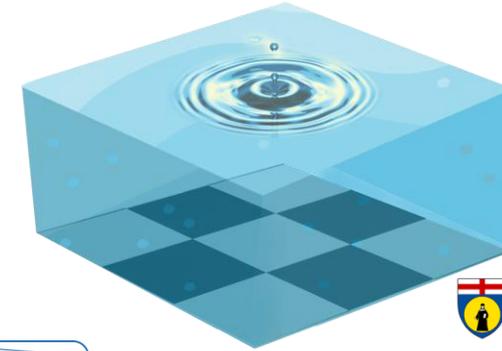
This presentation reviews concentration potential concepts and their applications in the design of **Water-Using Networks (WUNs)** with multiple contaminants. The *Concentration Potential Concepts* are proposed to determine the Concentration Order of Water Streams of Multiple Contaminants based on the overall allocating possibility of source streams to demand streams on the analogy of single contaminant **WUNs**. The precedence order of water-using processes, which is crucial for the network design, can be effectively identified by the values of **Concentration Potential of Demands (CPDs)**. The qualities of the source streams can be determined with the values of the **Concentration Potential of Sources (CPSs)**. The concentration potential concepts should be successfully used in designing of the different water-using networks. Computing software is proposed to combine the *Concentration Potential Concepts* and **Linear Programming Approach**. The methods based on the *Concentration Potential Concepts* have the advantages of simple calculation and clear engineering meaning. The results obtained with the *Concentration Potential Concepts* are comparable to that obtained by **Mixed Integer Nonlinear Programming (MINLP)** methods. It is shown that the *Concentration Potential Concepts* are powerful tools for the design of **WUNs** with multiple contaminants.

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