

Laboratory of Water, Environment and Urban Systems (LEESU)

UMR-MA 102 - UPEC/École des Ponts ParisTech/AgroParisTech

Key words

Micropollutants • Urban hydrology • Modelling
• Water resource management • Sociology of sciences and techniques • Public policy analysis

LEESU is based at the faculty of science and technology of the University Paris-Est Créteil, and at École des Ponts ParisTech on the Cité Descartes campus. It is a member of the laboratories of excellence ("Labex") Urban Futures, OSU-EFLUVE (Observatory of Sciences of the Universe - Fluid Envelopes: from cities to exobiology and Soere OLA (Observatory of Alpine Lakes), but also a member of the FIRE (Ile-de-France Federation of Environmental Research) and of the major interest domain (DIM) ancient and patrimonial materials.

Objectives and research topics

The research of the LEESU focuses on urban water through different approaches:

- physical and hydrological studies (runoff, transfer into the urban system, lake ecosystems),
- biogeochemical studies of emissions and fate and effects of chemical and microbiological contaminants on the continuum between the city, urban infrastructures, and the receiving environment,
- study of water policies, water uses, practices and their evolutions.



> Sources and fate of urban water contaminants

- Studying the sources and fate of emerging and/or priority chemical and microbiological contaminants
- Developing innovative characterisation methods of these contaminants
- Understanding the influence of practices on the level of contamination



> The urban cycle of stormwater

- Controlling the source of urban stormwater contamination
- Better understanding the role of stormwater management infrastructures
- Turning stormwater into a resource, contributing to urban amenity



> Study of water policies, water uses and their evolution in urban areas

- Studying how scientific knowledge leads to changes in urban planning, water management and public perception of water
- Analysing how public policies related to water management can have an influence on new scientific issues in this field



> Impact of the city on the functioning of urban water bodies

- Analysing the dynamics of physical/chemical/biological interactions in receiving environments
- Studying the hydrodynamics and the biogeochemical factors that explain the bioavailability of chemical contaminants, the dynamics of harmful algal blooms and the distribution of waterborne pathogens
- Investigating the contribution of the different urban sources to contamination of receiving environments

Analytical platforms

- Organic micropollutant analysis (GC-MSMS, GC-MS, GC-FID, UPCL-MSMS, HPLC-UV)
- Measure of trace elements, mercury, and methylmercury
- Microbiological contaminants (PCR)
- Characterisation of functional and genetic diversity of soil microbial communities
- Ecotoxicology: Zebrafish (*Danio rerio*)

LEESU

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