

HOSPITAL EFFLUENTS AND

URBAN SEWAGE TREATMENT PLANT

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THE SITE, located in the region of Haute-Savoie (France):

- The CHAL hospital, which opened in February 2012
- The Bellecombe sewage treatment plant, with 2 distinct treatment lines allowing to isolate hospital effluents
- **Receiving waters:** the Arve river



SIPIBEL FIELD OBSERVATORY:

Objectives: - Monitor effluents, their treatability and impacts on receiving waters

Since February 2012: - 1 campaign / month on the WWTP 3 campaigns / year on the Arve river



BELLECOMBE WWTP

- Compare hospital and urban effluents

Aquaref sampling protocol

More than 130 parameters monitored:

- standard physico-chemical water quality parameters (COD, BOD5, TSS, etc.)
- a hundred micropollutants: pharmaceuticals, surfactants, metals, etc.

RISKS AND

ACTION-LEVERS

- microbiological parameters: antibiotic-resistant bacteria and Pseudomonas aeruginosa
- bioassays on microcrustacean and microalgae, genotoxicity assays, oestrogenic disrupting effect and biological index of river quality

5 theses and 6 research programs and studies on:

- **Theme 1** Knowledge and modelling of micropollutants flows in the sewage system
- **Theme 2** Treatment process of micropollutants in wastewaters
- **Theme 3** Ecotoxicological and ecological risks
- **Theme 4** Human sciences and source control measures





A stimulating cross-border context:

- micropollutant Switzerland: In In treatment in WWTP – in France: risk and pressure assessment
 - complementary approaches
- A monitoring of micropollutant flows in the water cycle: hospital and urban influents and effluents, Arve river and Genevese Aquifer (drinking water)
- Strategic study: perceptions of water health stakeholders and of and inhabitants, action-levers and 2012

A complement to the pilot site, in order to:

- better understand pharmaceutical discharge sources, their metabolism and degradation processes in sewage networks
- characterize sanitary and environmental risks related to these effluents
- identify levers and seek out new and practical solutions by involving the whole responsibility chain of pharmaceutical, biocide and surfactant uses.





Awareness of the 'pharmaceuticals in water' issue:

SIPIBEL COORDINATION

TERRITORIAL

MediATeS

- Place the topic as part of a public health issue (raised by institutions)
- Inform health professionals about the issue and related best practices (raised by health trainers)
- Material: advocacy kits including hand drawn videos
- → Validation and collective ownership of the messages







First results:

- New knowledge about pharmaceutical compound emissions as well as hospital effluent treatability and impacts
- Development and validation of new chemical and biological indicators to monitor effluents
- A local strategy in terms of hospital effluent management and source control measures



Bellecombe site - SIPIBEL is a field observatory on hospital effluents and urban sewage treatment plant, animated by The Bellecombe "Syndicat" (managing the WWTP) and the Graie, The Rhone-Alps Group of Research on the Infrastructures and Water. It mobilises local organisations involved in water and hospital management, industrials and scientists. SIPIBEL is the support of research programs, including the French-Swiss project IRMISE arve aval (2012-2015), focused on the impact of micropollutant discharges from WWTP downstream of the Arve catchment and on the Genevese Aquifer, the SIPIBEL-RILACT project (2014-2018) on "Risks and measures related to pharmaceutical, detergent and biocide discharges in hospital and urban effluents" and the SIPIBEL-MediATeS project on "Awareness of the 'pharmaceuticals in water' issue". These projects are supported by the Rhone-Mediterranean and Corsica Water Agency, the Auvergne - Rhone-Alps Region, the French National Agency for Water and Aquatic Environments, the French Ministries of Ecology and Health, the Rhone-Alps regional public health authority in the framework of the regional plan for health and environment 2 (PRSE 2), the Haute-Savoie Department and the European Union.

