



The AOPTi Cornet project

AOPTi: A two years Cornet project to assess advanced photocatalytic oxidation process for micropollutant elimination in municipal and industrial waste water treatment plants.

The newly established consortium allies **IUTA**, **ULG-NCE** and **CELABOR** (coordinator).

The project started on September 1st. The SME meeting took place on March 1st in **CELABOR** with more than 10 industrial partners around the table.

Background and problem addressed:

Pharmaceuticals, personal care products, pesticides and other chemical substances used for domestic cleaning or for industrial production are continuously discharged in waste water and lead to global contamination of aquatic media all over Europe.

Removal of such persistent chemicals is complicated, only 20 to 50% of micro-pollutant are currently removed in Waste Water treatment plants.

Analytical methods become more and more sensitive so that traces of micro-pollutants are nowadays detected in waste water as well as in ground water and tap waters. The Water Framework directive 2000/60/CE listed 45 priority substances to be controlled.

Objectives of the project:

The aim of this project is the development of an innovative technology to ensure efficient elimination of micropollutants and toxic effects in waste water by a polishing treatment process.

This physico-chemical treatment step is placed after the conventional biological treatment and can be easily integrated into municipal and industrial waste water treatment plants.

The process is based on oxidation by ozone and an additional photocatalytic subsequent treatment, followed by an adsorption step. The technology is developed for companies involved in the water purification sector.



Innovation:

The **AOPTi** project plans to validate the complete elimination of the unbiodegradable and water soluble micro-pollutants by advanced oxidative processes combined to photocatalytic degradation by Titanium oxide at the scale of the Waste water treatment plant.

Process parameters have to be determined depending on the type of waste water in order to lead to total degradation of all micro-pollutants and to ensure absence of toxicity of the resulting water. Treated water will be characterized in term of chemical sub-products and toxicity.

CELABOR role is to implement the innovative photocatalytic advanced oxidative technology in the field of micro-pollutant degradation at a pilot scale (300 liters of water treated per hour).

CELABOR will characterize the water at a chemical point as well as the water toxicity before and after treatment. **CELABOR** will identify proper parameters for degradation (kinetic, powers...).

The deliverables of the project

The scaling-up of the **AOPTi** technology will be performed in 2 steps.

First a work-size pilot plant (see figure below) will be tested on industrial waste waters.

The pilot is already available at **CELABOR** for industrial experiments.

It can treat about 300 liters per hour. The degradation efficiency as well as the toxicity will be validated on different industrial effluents.



Second, a pilot plant will be constructed and tested in municipal wastewater treatment plants.

The new pilot (see figure below) will be built in a container so that it can be moved easily.

