



LIFE Impetus - Improving current barriers for controlling pharmaceutical compounds in urban wastewater treatment plants

LIFE14 ENV/PT/000739



[Project description](#) [Environmental issues](#) [Beneficiaries](#) [Administrative data](#)

Contact details:

Contact person: Maria João Rosa

Tel: 351218443625

Fax: 351218443032

Email: mjrosa@lnec.pt

Project description:

Background

Pharmaceutical compounds (PhCs) are emerging contaminants of environmental-health concern that, if not checked, could adversely affect drinking water sources and reuse projects, two key issues of sustainable water management.

To develop water reuse and ensure the preservation of drinking water supplies in Europe, it is thus important to eliminate these compounds during wastewater treatment. Wastewater treatment plants (WWTPs) are crucial barriers against PhCs, but many of these compounds are resistant to conventional treatments. In the logic of resource efficiency, cost-effective solutions based on existing infrastructure (many of them recently built) are essential, as new investments are limited in the near future due to economic constraints.

Objectives

LIFE Impetus aims to demonstrate measures for improving PhC removal in urban WWTPs with conventional activated sludge (CAS) treatment. As CAS is the most common biological process in urban WWTPs, the solutions may be easily transferred to wastewater treatment across Europe.

The project will carry out a three-year field test in two Portuguese CAS-WWTPs in water-stressed regions (Lisbon and Algarve). These will assess performance, using benchmarking tools and chemical enhancement measures easily implemented in the current treatment lines. The project will thus provide, for several European wastewater quality scenarios, guidelines for reliable and sustainable improvement of PhC removal in conventional WWTPs with minimum energy consumption. New adsorbents from local vegetal wastes (carob and cork) and biopolymer coagulants will be compared with commercial products.

A complementary objective is to produce valuable knowledge for water resource protection from PhCs and associated environmental policy. This includes PhC occurrence and concentration, control in WWTPs, bacterial antibiotic resistance and bioaccumulation in clams, a key product in many local economies in Algarve and elsewhere in Europe.

Expected results:

- A low-cost investment (CAPEX) and easy-to-implement solution for improving PhC control in conventional wastewater treatment, while keeping operating costs (OPEX) to a minimum and maximising recovery of resources and energy efficiency;
- Data on occurrence of PhCs in urban wastewaters, which could be used in decision-support systems, such as risk assessment, and future EU policy and legislation on PhC limits in urban wastewater;

- Innovation in methods/practices for improved PhCs control in two CAS aeration regimes (two WWTPs) – Operating strategies identified using benchmarking tools;
- Good performance indices, covering technical and economic aspects of treated wastewater quality, operating conditions (incl. energy efficiency) and removal efficiencies;
- Chemical enhancement strategies using two new eco-friendly adsorbents (from local wastes) and two natural coagulants;
- Development and validation of a procedure for PhC analysis in biological samples (clams);
- Analytical monitoring of PhC accumulation in clams (three campaigns and 150 samples);
- PhC analytical monitoring capacity-building of the consortium and the water sector (around 1000 samples analysed for 24 PhCs during a three-year period); and
- Cost-benefit analysis using innovative integrated approach based on four pillars: engineering (operating data from two WWTPs); environmental/economic impact (assessing the bioaccumulation of PhCs in clams, biomarkers and a key resource in the Algarve); health-related data (quantification of multidrug resistant bacteria and antibiotic resistance genes, a major concern in pharmaceuticals); and social indicators and stakeholders' attitudes towards PhC impact on environmental health, drinking water sources and water reuse projects (intangible costs and benefits).

Results

[Top](#)

Environmental issues addressed:

Themes

Water - Water quality improvement
 Water - Waste water treatment

Keywords

water quality improvement, waste water treatment

Target EU Legislation

- Water
- Directive 2000/60 - Framework for Community action in the field of water policy (23.10.2000)

Natura 2000 sites

Not applicable

[Top](#)

Beneficiaries:

Coordinator	Laboratório Nacional de Engenharia Civil, I.P.
Type of organisation	Research institution
Description	The Laboratório Nacional de Engenharia Civil – LNEC (National Laboratory for Civil Engineering) is a state-owned research and development institution founded in 1946. LNEC's main goals are to carry out innovative R&D and to contribute to best practice in civil engineering.

Partners

FFUL(Faculdade de Farmácia da Universidade de Lisboa), Portugal EHS(EHS – Environment and Regional Development Consulting, Lda), Portugal EPAL(Empresa Portuguesa das Águas Livres, S.A.), Portugal AdA(Águas do Algarve, S.A.), Portugal Simtejo(Saneamento Integrado dos Municípios do Tejo e Trancão, S.A.), Portugal FCUL(Faculdade de Ciências da Universidade de Lisboa), Portugal UALG(Universidade do Algarve), Portugal

[Top](#)

Administrative data:

Project reference	LIFE14 ENV/PT/000739
Duration	01-JAN-2016 to 30-JUN -2019
Total budget	1,492,452.00 €
EU contribution	855,589.00 €
Project location	Norte(Portugal),Centro(Portugal),Lisboa e vale do Tejo(Portugal),Alentejo(Portugal),Algarve(Portugal),Açores(Portugal),Madeira(Portugal)

[Top](#)

[Project description](#) [Environmental issues](#) [Beneficiaries](#) [Administrative data](#) [Read more](#)