

Improving current barriers for controlling pharmaceutical compounds in urban wastewater treatment plants: the LIFE IMPETUS project

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Pharmaceutical compounds (PhCs) are emerging contaminants of environmental-health concern that, if not controlled, 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 and receiving water bodies in Europe, it is thus important to control 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.

2016 brought to LIFE the project “Improving current barriers for controlling pharmaceutical compounds in urban wastewater treatment plants”, a project co-funded by the European Commission under the 2014 call of LIFE Environment programme. Led by LNEC – the Portuguese National Civil Engineering Laboratory, LIFE IMPETUS has six associated beneficiaries: two water utilities, Águas do Algarve and EPAL; one SME, EHS - Environment and Regional Development Consulting; and three academic institutions, the Faculty of Pharmacy of Lisbon University, the Faculty of Sciences of Lisbon University and the University of Algarve.

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

LIFE IMPETUS project involves long-term field tests in two Portuguese CAS-WWTPs (Beirolas WWTP and Faro Noroeste WWTP) located in water stressed regions (Lisbon and Algarve), and will focus on performance assessment, using benchmarking tools, and chemical enhancement measures easily implementable in the current treatment lines. The project will thus provide, for several scenarios of European wastewater quality, the guidelines for reliable and sustainable improvement of PhC removal in conventional WWTPs while maximising energy efficiency. New adsorbents produced from local vegetal wastes (carob and cork) and biopolymer coagulants will be compared to commercial products.

This communication aims at presenting the LIFE IMPETUS project (www.life-impetus.eu), outlining its contribution towards a circular economy in EU, both in terms of water reuse, vegetal wastes’ recovery and valorization, ecosystems’ services and safeguard of water bodies’ quality.

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