Life PHARMA DETOX

2ND NEWSLETTER

Demonstration of an innovative method for the detoxification of pharmaceutical wastewater from pharmaceutical facilities

Co-funded by the European Union
LIFE20 ENV/CY/000615

Project Technical Progress

Physicochemical Characterization of Productions Plants Effluents

The quality of real sample solutions from Medochemie production plants, including the Oral Penicillin Plant, Injectable Penicillin Plant, and Ampoules is investigated. NTUA team conducted a thorough physicochemical characterization of these samples. The analyses included essential parameters, for all the types of wastewaters such as pH, temperature, conductivity, COD (Chemical Oxygen Demand), BOD5 (Biochemical Oxygen Demand), TSS (Total Suspended Solids), total nitrogen, total phosphorus, chlorides, and toxicity as well as the concentration of the specific pharmaceutical ingredients.

Bench Scale Testing

The NTUA team successfully built a laboratory-scale catalytic reactor system and carried out the necessary experiments to define the final engineering design of the pilot system. This catalytic system can treat 200 ml wastewater samples and was designed to have an efficient contact area between solid, liquid, and gas phases (hydrogen/oxygen gas mixture). The monometalic catalysts (Pt, Pd, and Rh) supported on γ-alumina spheres were prepared and examined for the detoxification of pharmaceuticals under the hydrogen/oxygen stream.

Plumbing system in Medochemie

Medochemie has finalized the installation of the plumbing system for the three manufacturing plants, encompassing the Oral Penicillins Plant, Injectable Penicillins Plant, and Ampoules Plant. The effluents generated by these facilities are now efficiently separated from the overall wastewater stream. This newly implemented plumbing infrastructure directs these segregated effluents to the designated site where the pilot system for wastewater treatment will be installed.

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Project Technical Progress

Investigating Solutions Filtration

NTUA utilized two pilot units from the NTUA Brine Excellence Center, the Nanofiltration (NF) and Reverse Osmosis (RO) to treat some cubic meters of real wastewater solutions from the Medochemie B production plants. This action allows Pharma Detox team to have some preliminary experiments and real data on the quality of water produced from NF and RO systems. In consequence, these experiments facilitate the team to decide on which is the best technology to be used for the treatment of wastewater before the catalytic hydrogenation step.

EU Policies and Strategies relevant to APIs

One of the Life Pharma-Detox project objectives is to rise not only stakeholders but also general public awareness on the rejection of APIs. For this reason, to the Pharma-Detox website, was created a specific area from which stakeholders and general public can be informed about the European policy and strategies relevant to the project.

The first article on this webpage is dedicated to Commission Implementing Decision (EU) 2020/1161. This decision establishes a Watch List of substances for Union-wide monitoring data on potential water pollutants to determine the risk they pose and thus whether Environmental Quality Standards (EQS) should be set for them at EU level. This list should be updated every 2 years.

For further information and in-depth exploration of the project's alignment with EU policies, please visit our website: https://pharmadetox.eu/policy/

COMMISSION IMPLEMENTING DECISION (EU) 2020/1161 of 4 August 2020 establishing a watch list of substances for Union-wide monitoring in the field of water policy pursuant to Directive 2008/105/EC of the European Parliament and of the Council

Policy

Selection of substances for the 4th Watch List under the Water Framework Directive, European Commission, 15 August 2022

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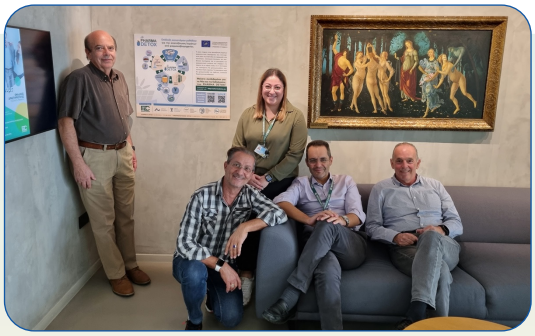
Installed noticeboards at the premises of the project beneficiaries

NEVIS has created the noticeboard of the project, containing detailed project information, in a simple and clear way. Below, you'll find images showcasing team members of the project beneficiaries having it installed at their premises.



NB installed in Medochemie premises

NB installed in NTUA premises

NB installed in Aarhus premises

NB installed in Unict premises

NB installed in Nevis premises

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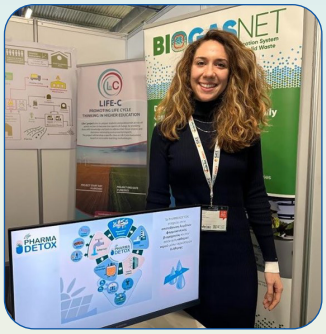
Project Events & Highlights

NTUA team at VerdeTec 2023 exhibition in Greece



March 17th-19th, 2023:
NTUA participated in VerdeTec 2023 at the MEC Exhibition Centre in Athens, Greece. VerdeTec, an international annual exhibition on environmental technologies, attracts visitors from various sectors. The NTUA team showcased the innovative solutions of the LIFE PHARMA-DETOX project for the safe and sustainable management of pharmaceutical wastewater. Prof. Maria Loizidou presented the project, among other topics, during the NTUA-Unit of Environmental Science & Technology session on green technologies.

Presentation at the 10th International Conference on Sustainable Solid Waste Management in Chania

June 23rd, 2023:
Maria Kyriazi, a Senior Researcher from the NTUA team, presented the Pharma-Detox project at the 10th International Conference on Sustainable Solid Waste Management, held in Chania. The presentation focused on the goals and actions of the project. The LIFE Networking Session highlighted how LIFE projects contribute to advancing the European Circular Economy Policy.

The conference drew over 900 participants from 80 countries, blending physical attendees and virtual speakers. Amongst the attendees were scientists, government officials, industry experts, private organizations, and research and educational institutions. The event served as a significant platform for the exchange of cutting-edge ideas, methodologies, and experiences in all facets of solid waste management.

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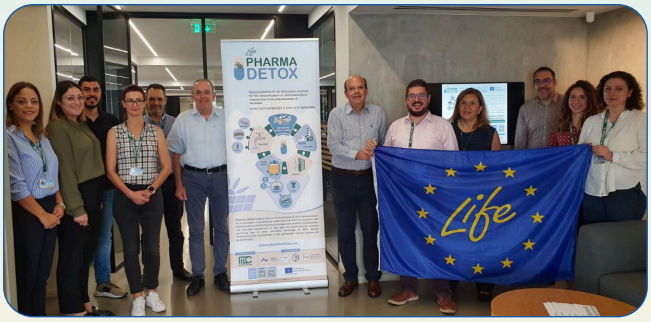
Project Events & Highlights

2nd Progress Meeting

November 15th, 2023: The 2nd meeting of the LIFE PHARMA-DETOX project was held at the premises of Medochemie Ltd in Cyprus. The five partners- National Technical University of Athens, Medochemie Ltd, Aarhus University, NEVIS, and the University of Catania - participated in a hybrid meeting to discuss the progress of the project's activities and milestones.



1st Stakeholder Consultation Event & 1st Steering Committee meeting

November 16th, 2023: The 1st Stakeholder Consultation Event and 1st Steering Committee meeting of the project took place at the facilities of the pharmaceutical industry Medochemie in Limassol. The hybrid meeting was attended by professors and researchers from European Universities and the University of Cyprus, representatives from the Departments of Environment and Water Development of Cyprus, City Sewerage Boards in Cyprus, and representatives from pharmaceutical companies and companies supporting pharmaceutical applications.

Dr. Christakis Sergides, R&D Innovation and CSR Director of Medochemie and coordinator of LIFE PHARMA-DETOX project, highlighted the project's mission to address pharmaceutical pollutants in wastewater, while Dr. Maria Kyriazi unveiled an innovative, eco-friendly detoxification system's initial design. Stakeholders actively contributed insights, shaping the future of this transformative project aimed at mitigating environmental impact and promoting sustainable practices in pharmaceutical wastewater treatment. In total, 35 participants joined the event.

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Forthcoming Events

Online Workshop

An online workshop is planned in the following months, focusing on wastewater management, water management, circular economy, filtration techniques, and wastewater treatment using RES. The increased concentration of APIs in water bodies, caused by the global rise in pharmaceutical use, resulted in higher levels of APIs being discharged into water systems.

The ineffectiveness of conventional wastewater treatment plants leads to their persistence in the environment.

Representatives from European Projects (LIFE and Horizon projects), institutes, and pharmaceutical companies will be invited to the workshop to share their knowledge in wastewater management technologies for the elimination of APIs in the environment.

COORDINATING BENEFICIARY

MEDOCHEMIE

ASSOCIATED BENEFICIARIES

AARHUS UNIVERSITY

NEVIS

UNIVERSITÀ degli STUDI di CATANIA

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