



The LIFE BIOAs project has received funding from the LIFE Programme of the European Union

## Newsletter N° 1 - Construction of the pilot plant for the production of bio-adsorbents

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#### 1. Block diagram of the process

The following figure shows a simplified block flow diagram of the process for the production of innovative bio-adsorbents for arsenic removal from drinking water, using olive pomace as raw material:



The three main sections of the process are:

- Hydrothermal carbonization;
- Collection and drying;
- Granulation and activation.

In the first section the olive pomace is converted, through an innovative hydrothermal carbonization (HTC) treatment, into a particular hydrochar in which a metal, active in the adsorption of arsenic, is dispersed. The hydrochar produced is suspended inside a solution rich in salts and organic compounds. This suspension is treated in the second section of the process, where the solid is recovered from the hydrothermal carbonization solution through a suitable filtration system and dried to remove all residual moisture. The dry solid is fed to the third section of the process, where it's granulated thanks to the use of a suitable binder and then activated through a high temperature process to guarantee a greater active surface for the arsenic adsorption.

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**2. Construction of the pilot plant**

Demonstration activities at ECOREC industrial site include the production of the bio-adsorbents starting from pre-treated olive pomace. As agreed in the documentation provided to the Lazio Region, a waterproofed flooring was created in order to waterproof the area in which the prototype has been located.



Waterproofed for pilot plant placing

The prototype for bio-adsorbent production has a potentiality of about 12.6 kg of bio-adsorbent per batch and all the equipment have been placed inside a 12 m container.



Container

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The prototype for the production of bio-adsorbents is composed of the following units:

- reagent dosing station



- hydrothermal reactor with control panel



- filtration system and pump



- oven with control panel  
(for drying and activation treatment)



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- granulation system with control panel



- inerting system (for oven and reactor)



- electric panel and electric lighting



- pipng.



Pilot plant overview