

ECOPOLIS project: The transformation of a contaminated industrial wasteland into a living-lab based on a phytomanagement approach

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Themes:

- (1) Eco-toxicology and environmental pollution
- (2) Ecology, functioning and evolution of urban and anthropized systems

Abstract:

The main goal of the ECOPOLIS project is the restoration by phytomanagement of the industrial wasteland of Vieux-Charmont (Doubs, France), located in an urban area and contaminated by metallic trace elements (MTE) and hydrocarbons. With the collaboration of different public and private partners, a living-lab will be implemented on the area for research activities and communication with the public. This implementation is based on three specific objectives, (1) to characterize spatially and quantitatively the contamination, mobility and health and environmental impacts due to contaminants on the site. This will be done by monitoring biodiversity on the site and measuring contaminants transfers into ground and surface water, vegetation and animals, (2) To test different management scenarios for the contaminants based on phytoremediation methods in accordance with the principles of the National Methodology for the Management of Polluted Sites and Soils and its associated standard (NF X31-620) and, (3) To assess the potential reproducibility of the methods on similar industrial wasteland through the territory.

The presentation will first highlight the overall project and living-lab implementation based on a short (3 min) video. The second part of the presentation will focus on the data sets obtained within the period 2021-2022. The first set of data showed that 3 MTE are dominant on the site, Zn, Pb and Cd, that have been shown to have potential toxic effect on human health, based on the exposure scenarios and bioaccessibility tests. A botanical survey led to the identification of some native plants that can accumulate Zn (> 2000 mg/kg DW) and Cd (> 15 mg/kg DW) in aerial parts. Some of these plants are further being studied for their phytoextraction potential, with the final aim to develop tools to reduce the available contents of these elements in the soil and their toxicity.