

## **Study of a Biodeterioration process of Cementitious Matrices: Application to Asbestos-Cement Wastes**

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Large quantities of asbestos materials were produced and used throughout the 20<sup>th</sup> century until its utilization was banned in France in 1997, then throughout the European Union in 2005. The amount of material containing asbestos-cement, in-place in 1997, on the French territory has been estimated to be 24 million tons (ADEME 2017).

The French regulation considers this asbestos waste as hazardous waste, which is mostly disposed in hazardous waste storage facilities. However, these facilities do not have infinite storage capacities, and are gradually reaching saturation.

The objective of this research project is to develop a process for the deterioration of asbestos-cement with the aim of reducing the volume of this type of asbestos waste, which is composed of 5 to 20 wt% asbestos fibers. Since the cementitious matrix (i.e., the cement containing asbestos fibers) are highly alkaline materials (pH values over 12.5) akin to carbonate rocks, they are vulnerable to acids. Agro-food effluents, waste from agricultural or food industrial activities, are known to be aggressive towards the concrete-based materials of agricultural structures due to the presence of high concentrations of organic acids. Therefore, it is aimed to take advantage of the acidic properties of such effluents to reduce the volume of cementitious asbestos waste, and therefore their management costs.

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