



New technologies for CO_2 recovery

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XXXVI Cycle

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Background

Green and environmental chemistry.

Objectives

Recovery of CO_2 as a raw material for the stabilization of fly ash.

Methodologies

The methodology consists in mixing a combination of Fly Ash, Bottom Ash, Flue Gas Desulphurization and Coal Fly Ash. The samples are left to mature at room temperature. Then the leaching test is performed according to the CEN normative (CEN EN 12457-2) to verify the heavy metals immobilization. The pH of the filtrates is measured by a pH meter. Indeed, as a consequence of carbonation, the pH is expected to decrease from 12 to about 8. Leaching solutions are analyzed one and two months after the stabilization process to verify the efficacy of the process through TXRF spectra and XRD measurements.

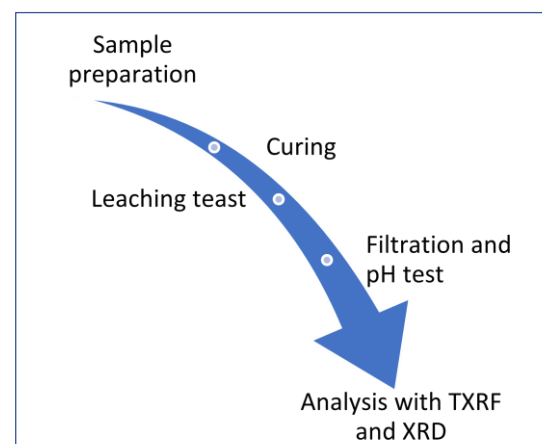


FIGURE 1. PROCESS.

Expected Results and Impact

An increase in the crystalline phases of calcium is expected, which indicate that the carbonation process has taken place, in those samples in which a lot of calcium is present. The occurrence of the process leads to sequestration of CO_2 and stabilization of heavy metals. The impacts act on various aspects, for instance, the sequestration of CO_2 by reducing the amount of greenhouse gases emitted into the atmosphere. Moreover, using it as a raw material for the stabilization of fly ash, making it safe and usable in construction, avoiding its destination in landfills.