

## Smart management of industrial waste for CO<sub>2</sub> sequestration

**CSIC organization, University of Seville and University of Cádiz have developed a method to recycle the industrial waste as alternative to the current standards for CO<sub>2</sub> sequestration, under ambient temperature and pressure conditions. The new process is suitable for the treatment of calcium-rich waste, presenting this double and simultaneous benefit, the CO<sub>2</sub> capture and recycling of waste. Is an innovation in the field of greenhouse gases reduction, whose main advantages are the costs reduction, low complexity and low energy consumption.**

### *An offer for Patent Licensing*

#### Waste recycling for decontamination

The invention consists in a method to treat industrial waste as an alternative application for the capture of the environmental CO<sub>2</sub>. Treatment of wastes is a critical issue for most European governments, which are looking for new ways to avoid burdening the environment and at the same time use waste productively.

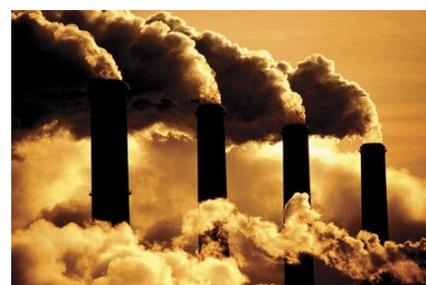
The new process is suitable for the treatment of calcium-rich wastes, as those produced in the acetylene industry, which offers a viable alternative to the current standards. The process key is the smart management of the industrial waste by controlling its physical properties and the reaction kinetics in order to obtain high carbonation efficiencies.

The process is based on the total carbonation of the calcium-rich waste at ambient pressure and temperature, obtaining this way calcium carbonate, innocuous material that can be dispersed or sold, increasing the value of the process outcome. Controlling the reaction experimental set-up, high carbonation degrees can be obtained by two different procedures: ambient carbonation or induced carbonation, both of which sequestering almost the maximum carbon dioxide that is stoichiometrically allowed.

Therefore the simplicity of this technique is enormous in comparison to other similar ones, as it doesn't use any expensive procedure from an energetic or technical point of view, but simply uses the waste as they are generated, thus reducing the economic and energy costs of the process.

#### Main innovations and advantages

- High carbonation efficiency on mineral CO<sub>2</sub> sequestration (up to 95% against 50% achieved by existing methods) using industrial waste.
- Waste management favoured as industrial waste are proposed as reactive matter. Costs reduction.
- The process is performed at ambient temperature and pressure making it cheaper and easy to implement in industrial scale.
- Mineral sequestration by-products consist mainly in inert carbonate minerals, which could be eventually commercialized, what will increase the profitability of this process.
- The process allows the direct elimination of CO<sub>2</sub> without the previous stages of gas separation which the current procedures require.



New method for atmospheric CO<sub>2</sub> capture using industrial waste, presenting a double environmental benefit, the air pollution control and recycling of industrial waste, transforming them into harmless and value added materials.

#### Patent Status

PCT ("International") patent application filed. Priority established by a Spanish patent application.

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