

## CASE STUDY: MONITORING PARTICULATE EMISSIONS FROM A QUARRY FOR CEMENT PRODUCTION

**Client:** Quarry – Confidential

### Mission:

Conduct specialized monitoring of fine particles ( $PM_{80-2.5}$ ) to assess the specific impact of quarry activities on air quality, with the goal of implementing appropriate corrective measures and enabling the continuation of quarry expansion.

### Challenge:

The quarry's expansion activities had been hindered by complaints from the surrounding population, leading to economic losses for the operator and growing dissatisfaction within the community. The main challenge was to distinguish particles emitted by the quarry from those generated by other nearby dust sources, including natural particles (biogenic and geogenic) and anthropogenic ones (road traffic, metal abrasion), in a complex, multi-source environment.

### Solution:

Specialized dust monitoring based on morpho-chemical differentiation and source attribution of particles using the ASPA MC<sup>2</sup>™ method, in order to quantify the specific impact of quarry operations relative to other PM sources. This approach also included the use of reference samples ("fingerprints") of quarry dust.

### Added Value and Impact:

Accurate quantification of quarry-derived particles enabled the implementation of effective mitigation measures (e.g. wheel washing, wall humidification, controlled blasting), resulting in a 61% reduction of emissions directly attributable to the quarry over four years. These results allowed the operator to continue expanding the quarry while strengthening constructive collaboration with the local population.

