



## Identification of more than 850 emerging micro-pollutants (or other compounds) through a targeted approach

### Interests and principles of the targeted approach:

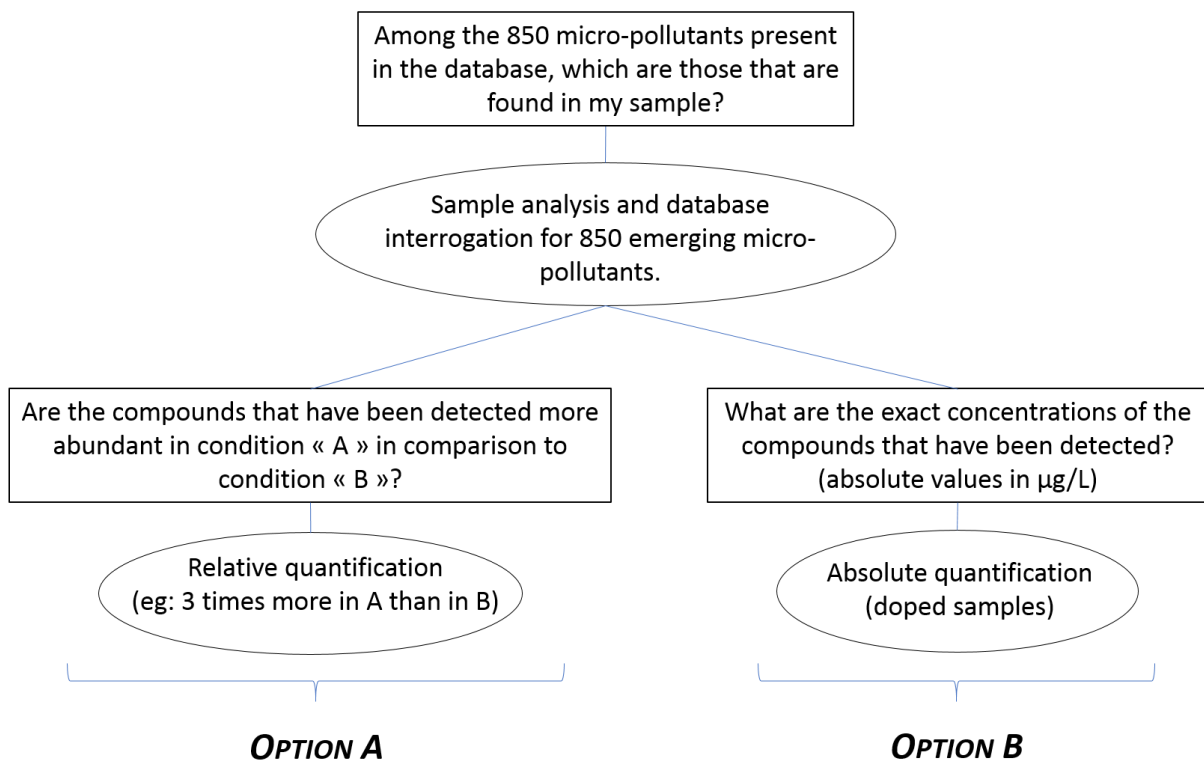
The targeted approach aims to focus the analysis on a number of predefined compounds (= the targets). Our company has developed a broad-spectrum targeted approach to detect and quantify a wide range of emerging micro-pollutants and relies on a unique technology:

- The 850 target micro-pollutants are concentrated, separated from each other and then analyzed and quantified through a fully automated system. This technology is based on solid phase extraction techniques (online-SPE) coupled with high performance liquid chromatography (HPLC) and a high resolution mass spectrometer (Orbitrap).
- Each analysis follows a very strict quality control to ensure the proper functioning of the analytical system. The entire analysis is undergoing ISO17025 accreditation according to the NF-T90-210 standards. In particular are taken into account:
  - The real-time monitoring of the pressures of the chromatographic system: this allows to check that the chromatographic system has functioned normally throughout the analysis.
  - The analysis of 8 internal standards that have been added to the sample. This validates the sensitivity criteria of the mass spectrometer, its calibration and the proper functioning of the chromatographic system.
  - The analysis of the 850 compounds added at a level of 0.1 µg / L in a matrix of ultrapure water injected during each analysis. This allows to verify that the 850 molecules are detectable on the day of the analysis and to check the stability of the doping pool.
  - Injection of analytical blanks (ultrapure water without any pollutants) between each sample. This allows to ensure that no contaminants are present in the analytical system and that the emerging pollutants detected during analysis thus come from the sample.
- The thresholds of detection and quantification obtained with our technology are among the lowest on the market (of the order of nanograms per liter for most compounds), that is to say, well below the regulatory thresholds set at 0.1µg / L, which offers the possibility to detect even the compounds present at trace levels.

- The confirmation of the identity of the 850 micro-pollutants is based on several criteria. If one of these criteria is not fulfilled, the presence of the molecule is not formally confirmed:
  - Validation of mass accuracy.
  - Validation of the retention time.
  - MSMS spectrum validation
  - Absence in analytic whites.
  
- When these pollutants are detected, the quantification is carried out by the technique known as "spiked sample analysis". The principle is based on the addition of increasing concentrations of the 850 pollutants directly into the sample. This quantification technique offers several advantages:
  - The assay is performed directly in the sample matrix, which eliminates the matrix effect that is detrimental to the quality of the quantifications.
  - This quantification principle makes it possible to avoid any extraction step. Therefore yields are considered to be 100% (see NF-T90-210)
  - The quantification is based on a small volume of water (50ml), in a single injection, without any special preparation of the sample apart from centrifugation. This quantification is therefore generating very little wastes.

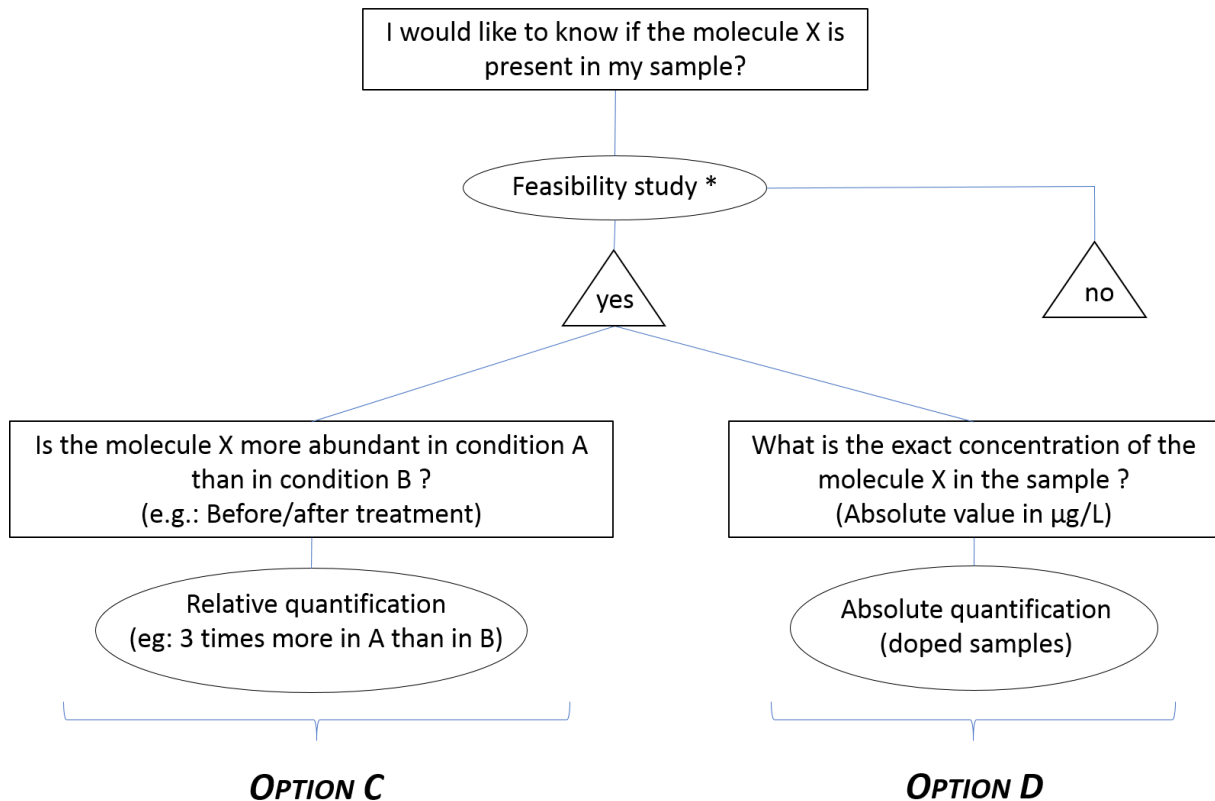
## How is your project organized?

For the quantization step, two different options are proposed depending on the question you want to answer.



## And if I want to analyze other target compounds?

The method described above has been optimized for the detection of 850 micro-pollutants in water type matrices. However, this analysis can also be adapted to other types of projects. If your study is about a compound that is not in our list of 850 emerging micro-pollutants or if your sample is not a "water" matrix, the project will be organized as follows.



The feasibility study aims, among others, to answer the following questions:

- Is the matrix (= the nature of the sample) compatible with non-analytical techniques?
- Is the X molecule part of the 850 emerging micro-pollutants analyzed by Profilomic? If not, is the corresponding analytical standard available on the market?
- If compound X is not one of the 850 emerging micro-pollutants analyzed by Profilomic and is available on the market, can it be analyzed in our laboratory conditions?
- If the compound X is analyzable. What are the detection thresholds, the quantification thresholds, and the dynamic range of the analysis?