Presence of Perfluorinated Alkyl Substances (PFAs) in Surface Waters in the City of Medellín, Colombia

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Introduction

Persistent organic pollutants
Included in the Stockholm Convention.
Alkylperfluorinated substances (PFAS).

Characteristics
Very stable C-F bond.
Difficult to eliminate using conventional treatment processes.
They represent a high risk for living beings and ecosystems.

Applications
They are used in various industrial applications, such as the manufacture of carpets, upholstery, clothing, floor wax, textiles, firefighting foams and sealants.

PFOA exposure
Presence in water, food and derived products.

Today
Environmental problems and health risks.
Most countries do not have associated environmental regulations.

PFAs in South America

Objective

To determine the concentration of PFOA in untreated water from the city of Medellín - Colombia.

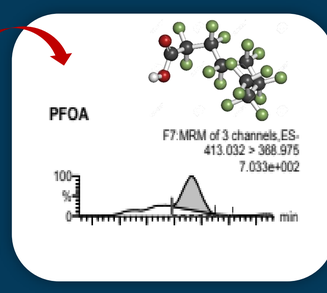
Methodology

Sampling

SPE extraction

UHPLC-QqQ MS/MS

Quantification

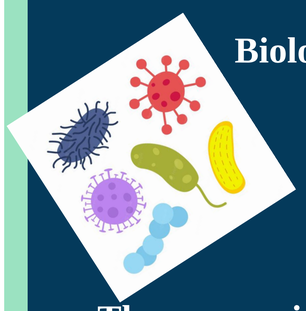


Results

LoQ 20 ng/L

Matrix	PFOA	PFOS
Medellín river	X	X
Influent “Aguas Claras” WWTP	✓	✓
Effluent “Aguas Claras” WWTP	X	✓
Influent “San Fernando” WWTP	✓	✓
Effluent “San Fernando” WWTP	✓	✓

No levels of PFAs were detected above the detection limit. Although additional sampling is required considering new points and periods of the year.



Biological treatments are applied in the evaluated WWTP.

Conclusions

There are evidences related to the presence of PFAs in WWTP of the city of Medellín – Colombia.

Biological methods appear to be unable to remove contaminants.

¿Medellín –Colombia?