



Quantification of PFAS in planktons and in sediments

Type of the project

Semestre project or master project

Laboratory

Central Environmental Laboratory

Professor

Florian Breider

Supervisor

Florian Breider

Contact person at Sailowtech

Shan Yao, Arthur Tabary

Student

To be determine

Context

Sailowtech is an association and a MAKE project that aims to raise awareness of environmental issues, particularly those relating to aquatic environments. It promotes frugal and participative field science, open-source science and low-tech approach. To achieve this, Sailowtech organises scientific sailing expeditions in lakes, seas and oceans to discover field science, test the protocols and devices build by students during the semester and collect environmental data.

PFASs, per- and polyfluoroalkylated substances, are synthetic compounds that have been produced on a large scale since the 1950s for commercial and industrial applications. They are extremely persistent in the environment and toxic to animals and the human body. Some compounds have been detected in the human body and in animal flesh, posing a problem. These compounds, which find their way into the environment for various reasons, are ingested by plankton, the base of the food chain, and move up the trophic levels through bioaccumulation. Despite their high toxicity, they are still relatively unknown and little studied.

Description of the project

The project involves quantifying and qualifying the pollutants found in the plankton sampled during the "Alpine Lake" expedition organised by Sailowtech in February 2024. Quantification will focus on certain PFAS substances, which are still to be determined. An analysis of pollutants in the sediments may also be carried out. The aim of this project is to carry out an analysis of the concentrations of pollutants that can be found in plankton and to make the link with the food chain.

Over the course of the semester, new sampling sessions may be organised on Lake Geneva to complete the analysis.



Problematisation

Main tasks

- Planning the project over the course of the semester;
- Identify target pollutants;
- Quantify and qualify pollutants in plankton and sediments;

Delivrables

- Summary report ;
- Oral presentation at the final project presentation session organised by Sailowtech;

Documentation

Here are a few resources as a starting point :

- <https://pubs.acs.org/doi/10.1021/acs.est.9b03230>
- <https://pubs.acs.org/doi/10.1021/acs.est.6b05821>
- <https://link.springer.com/article/10.1007/s10661-023-10912-8>
- <https://pubs.rsc.org/en/content/articlepdf/2021/em/d0em00510j>
- <https://www.mdpi.com/1660-4601/19/24/16729>
- <https://www.mdpi.com/1660-4601/19/24/1672>

Planned interaction with Sailowtech

By carrying out a project with Sailowtech, the student automatically becomes a member of the association. They will take part in meetings (around 3-4 during the semester) to share the progress of their project and, if necessary, to discuss any project-related needs. In addition, as a member of the association, the student may, if he or she wishes, take part in the various activities organised by the association.

Contact

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