



PFAS-containing customer products are polluting our drinking water resources

Awareness of invisible water pollutants from our daily life

PFAS contamination in drinking water is an emerging issue worldwide. Through consumption and disposal of PFAS-containing products, these colorless and odorless chemicals can easily migrate into our drinking water resources and bring serious health problems.

PFAS, short for per- and polyfluoroalkyl substances, is a large emerging family of synthetic chemicals widely used in industrial applications and consumer products such as cosmetics, food packages, non-stick cookware, water resistant clothing, and firefighting foam.[1-3] PFAS are highly stable and extremely resistant to degradation in the environment. Even worse, they are threatening the public drinking water supply due to their toxicity and bioaccumulation potential. Indeed, these harmful chemicals are frequently detected in Sweden and have already threatened the public drinking water supply, especially with two of the most notorious fluorochemicals, PFOA and PFOS.[4] However, the public is usually unaware of these dangerous chemicals hidden in their daily living products. During this project, you will be involved in the following activities for a thoughtful review about the impact of PFAS products on water systems.

- Investigation of potential PFAS-containing household products in the market
- Survey of the public's knowledge about PFAS issue for drinking water
- Spread the word about PFAS related water contamination on social media
- Discussion about novel material technologies for PFAS removal (i.e., graphene-related 2D materials)

Target group of students
M, Bt, K, Kf, SB

Group size
4-6

Special requirements
Basic knowledge in materials science and engineering; background in chemistry, biology and nanotechnology are meriting.

Suggestion from
Name: Zhenyuan Xia
E-mail: zhenyuan@chalmers.se
Phone: 031-7722714

Supervisor
Name: Zhenyuan Xia
E-mail: zhenyuan@chalmers.se
Phone: 031-7722714

Examiner
Name: Uta Klement
E-mail: Uta.klement@chalmers.se
Phone: 031-7721264

Language
English

Can the project be duplicated?
No

Literature recommendation:

1. Borg, D., and Ivarsson, J. "Analysis of PFASs and TOF in products." TemaNord (2017):543 <https://norden.diva-portal.org/smash/get/diva2:1118439/FULLTEXT01.pdf>
2. European Environmental Agency, 2019. "Emerging chemical risks in Europe — PFAS." <https://www.eea.europa.eu/publications/emerging-chemical-risks-in-europe>
3. Whitehead, H., et al., "Fluorinated Compounds in North American Cosmetics." Environmental Science & Technology Letters. 8 (2021)538–544
4. Gobelius, L., et al., "Per- and Polyfluoroalkyl Substances in Swedish Groundwater and Surface Water: Implications for Environmental Quality Standards and Drinking Water Guidelines." Environmental Science & Technology, 52.7 (2018): 4340-4349