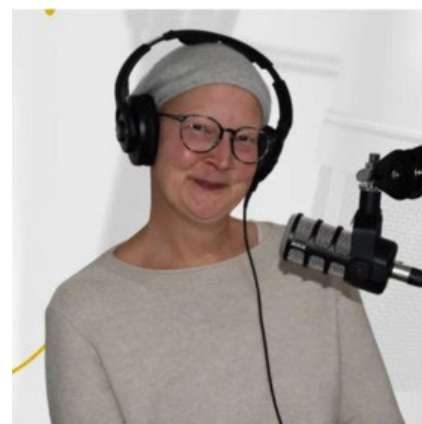


Tuesday 19<sup>th</sup> March 2024, 4.15 pm  
Room 002, Hallerstrasse 12, GIUB

### Hidden to most, a potential threat to many – on the environmental occurrence and mobility of thioarsenates and their uptake in food

Prof. Britta Planer-Friedrich  
Bayreuth University

**ABSTRACT.** Consumers rely on commercial food being regulated by authorities for their safe consumption. Rice is an important staple food worldwide. Even in countries where it traditionally has not been part of the daily diet, rice and rice products are becoming increasingly popular for alternative or infant diets. However, rice is also the most significant source of human exposure to arsenic. Limits exist for the most critical inorganic species, arsenite and arsenate, however among the non-regulated “rest” of total arsenic, some arsenic species hide that are potentially even more toxic and typically not even detected. These are inorganic and methylated arsenic-sulfur compounds, so-called thioarsenates.



My group has focused over the past 15 years on thioarsenate research. I will take you on a journey from their first discovery in the extremely sulfidic environments of Yellowstone National Park's hot springs, to their detection in more common groundwater settings, and show you how their formation can turn peatlands from arsenic sinks to sources. I will briefly touch on analytical challenges and explain why the importance of thioarsenates has been overseen so far. Their formation in paddy soils and uptake in rice plants, unexpected formation *in-planta*, and final accumulation in the rice grain will be a focus. I will demonstrate the ubiquitous occurrence of thioarsenates in rice worldwide, their formation during commercial production of rice cakes, and discuss what that all could mean for the latest activities of the European Food Safety Authority EFSA on evaluating and potentially regulating organic As compounds. Last but not least, hidden thioarsenate-related risks of current remediation strategies, designed for just decreasing inorganic As, as well as suggestions for better-suited remediation strategies taking thioarsenates into account will be presented.

Join me on the journey of newly discovered species of an old and very well-known toxicant that challenge our current biogeochemical understanding and existing analytical, control, and remediation routines.

**BO** Prof. Britta Planer-Friedrich is a Junior Professor at Bayreuth University, where she initiated and coordinated the international Master Program "Environmental Chemistry." With a PhD in Hydrogeology/Geochemistry, Britta possesses extensive expertise in environmental geochemistry. Previously, she was a Postdoctoral Researcher at Trent University, Peterborough, Canada, focusing on the importance of arsenic-sulfur compounds. Subsequently, Britta received a grant from the German Research Foundation Emmy Noether Research Group to investigate the Hydrogeochemical speciation of arsenic, gold, and copper in iron-sulfide systems, considering abiotic and microbial catalyzed interactions.