

Soutenance HDR - Zoyne PEDRERO ZAYAS

Mercredi 27 octobre 2021 à 14h00 - Amphi IPREM* / visio

Le 26 octobre 2021



HABILITATION A DIRIGER LA RECHERCHE

Zoyne PEDRERO ZAYAS (IPREM)

Titre: **"Speciation and natural isotopic fractionation in a unique pattern : New insights into mercury in living organisms"**

Teams | 🗨️

Résumé :

Mercury (Hg) pollution is considered a major environmental problem[^](Minamata convention on Mercury). Due to its extreme toxicity, Hg has been recently included in the top ten chemicals of major public health concern by the World Health Organization (WHO). Methylmercury (MeHg) hazardous effects are biomagnified through the trophic chain, resulting in serious social, environmental and human health effects. However, Hg metabolic pathways in biota still remain poorly understood.

Its understanding is crucial to elucidate its (eco)toxic effect and to identify important drivers of the Hg biogeochemical cycle. EU food safety agencies such as the European Food Safety Authority (EFSA), and international organizations such as the United States environmental protection agency (EPA) and the Food and Agriculture Organization of the United Nations (FAO) clearly advise about the non-consumption of certain fish species by vulnerable populations (including pregnant women and young children) depending on their MeHg concentration.

The understanding of the fate of Hg and selenium (toxicity antagonist) in biota, as well as their interaction could contribute to answering these yet unresolved questions of socioeconomic and health interest. It should be considered that the speciation of an element, and not its total concentration, determines its reactivity in the environment and its essentiality or toxicity in living organisms. My research activities during the last ten years have been principally focused on the development of analytical approaches combining speciation (several hyphenated techniques LC/GC-ICPMS) with stable isotopes (labelled and natural isotopic signature) for the characterization of Hg in biological samples.

The global impact of Hg pollution is unquestionable. Based on the most recently obtained results and considering the very timely necessity of elucidating the interaction of this element in living organisms, so far unknown, my research perspectives focuses on the contribution to the understanding of Hg fate in living organisms by the development of analytical strategies in a multidisciplinary (analytical chemistry, fish/human nutrition, environmental science, toxicology and aquaculture) research context. The main perspectives in the short and medium term are articulated around three axes: /i/. Development of analytical strategy for Hg species-specific isotopic characterization, /ii/. Se isotopic characterization in biological samples and /iii./ Understanding of Hg-Se interactions from fish to human.

***Évènement soumis au Pass sanitaire**