

## Correspondence

# Comment on “Linear and Branched Perfluorooctane Sulfonate Isomers in Technical Product and Environmental Samples by In-Port Derivatization-Gas Chromatography-Mass Spectrometry”

In their article,<sup>1</sup> Chu and Letcher state that “[o]n the basis of various configurations of the C<sub>8</sub> hydrocarbon chain, hundreds of perfluorooctane sulfonate (PFOS) isomers are theoretically possible.” As we have previously shown, there are only 89 geometrical isomers of PFOS (since the authors are not using a chiral column, this is all the methodology is capable of separating), and even if optical isomerism is also taken into account, the total number of PFOS isomers is still <200.<sup>2</sup> After analyzing a small group of egg and polar bear samples, the authors go on to conclude that their results suggest that “branched [PFOS] isomers are selectively degraded, metabolized, or less accumulated in the animal tissue tested, and that L-PFOS is selectively enriched via preferential bioconcentration, uptake, and accumulation in their respective food webs.” The authors lack sufficient sample and experimental design information to make these sweeping conclusions regarding the behavior of PFOS in food webs in this otherwise purely analytical method development manuscript. In addition, by making such general statements without appropriate citations of the pre-existing literature, Chu and Letcher are ignoring

many other previous discussions regarding the differential congener specific sources and environmental/biological behavior of perfluorinated sulfonic acids. The linear PFOS isomer is already expected to display preferential accumulation versus its branched counterparts in organisms.<sup>3</sup> Furthermore, there are multiple technical mixture sources of perfluorinated sulfonic acids in the environment each with differing relative amounts of linear and branched congeners.<sup>4</sup> In their study, Chu and Letcher have only analyzed a single source mixture, which precludes any generalizations about PFOS isomeric signatures over such large geographic regions as the composite sample set integrates. There is also the possibility that the atmospheric,<sup>5</sup> biological,<sup>6</sup> and potentially abiotic degradation products of perfluoroalkylsulfonamides (which also have presently very poorly defined linear versus branched congener profiles) may also be substantial, if not dominant, contributors to the total PFOS profiles in these samples. Thus, the authors should both refrain from attempting to claim such intellectual priority in an ancillary approach when a well established field of research already exists and avoid making unsubstantiated claims regarding the environmental behavior of PFOS via a method development paper.

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