Functional assay for two end member dissolved organic matter (DOM) at different mixing ratios

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Introduction

In this study, ESHA(Elliott soil humic acid) and algal DOM were selected as two contrasting source end members[1]. This study examined the conservative behavior of different mixtures of two end members with respect to various environmental functions of DOM such as metal binding, biodegradation, the formation potential of disinfection by-products.

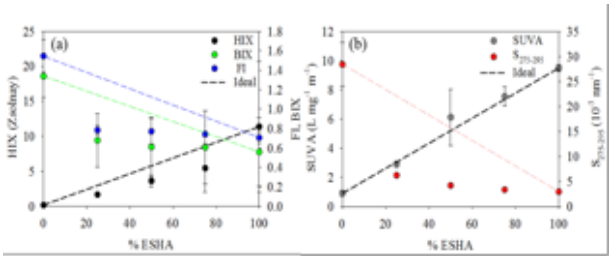

Figure 1: Changes of spectroscopic indices with increasing ESHA content in DOM mixtures.

Table 1: Percent differences (%) calculated from the difference between measured value and calculated values based on ideal mixing lines

	Index	% Absolute difference					% Avg.
		Mixing ratio (Algae:ESHA)					
		1:0	3:1	1:1	1:3	0:1	
Cu(II) Binding	Log K_M	0.0	113.0	23.4	5.0	0.0	28.3
Biodegradation	HIX	0.0	5.0	30.3	2.2	0.0	7.5
	BIX	0.0	40.1	31.2	30.6	0.9	20.6
	FI	0.0	35.6	36.2	24.1	0.6	19.3
	$S_{275-295}$	0.0	54.8	34.3	13.5	0.1	20.6
	SUVA	0.0	35.6	51.5	17.5	0.0	20.9
DBPs	THMFP	0.0	3.2	6.8	4.5	0.0	2.9

Discussion of Results

Copper binding coefficient (log K_M) and specific trihalomethane formation potential (THMFP) conservatively increased linearly with increasing contribution of ESHA in the DOM mixtures. After biodegradation, several spectroscopic indices behaved conservatively with the variations of DOM sources in the mixtures.

[1] Lee, M. H., Osburn, C. L., Shin, K. H., & Hur, J. (2018). *Water research*, *147*, 164-176.