

Occurrence and risk assessment of emerging contaminants in agricultural and urban hydrographic basins – similarities and differences among the human activities

Emerging pollutants in aquatic ecosystems

Introduction

São José do Rio Preto



Agricultural land use (sugarcane mainly)



Sampling in February, May and September/2022

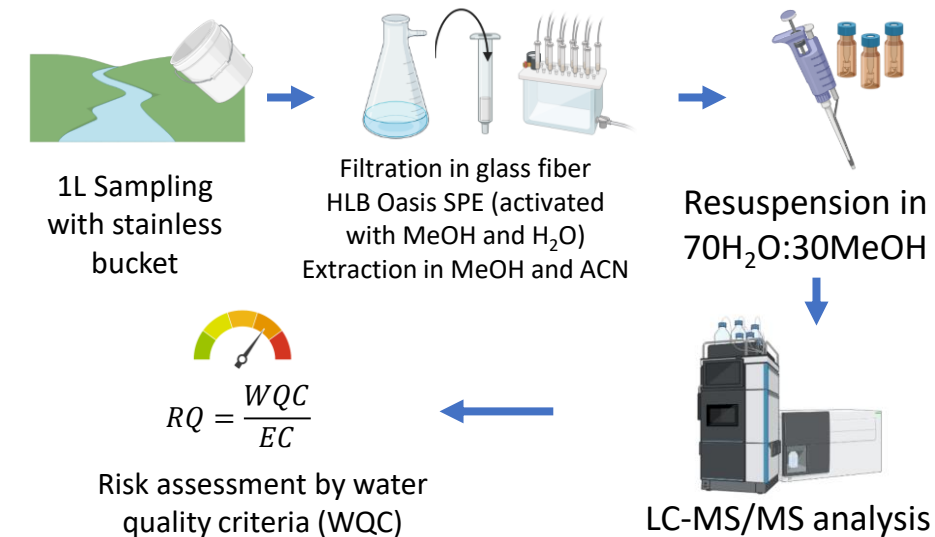
Occurrence of 31 emerging contaminants (pesticides, hormones personal care and industrial substances)

Campinas



Urban and industrial land use

Methodology



Results and discussion

By ANOSIM (analysis of similarities), the studied basins are significantly different of occurrence of EC ($p=0.03$).

São José do Rio Preto (Turvo/Grande river) \neq Campinas (Atibaia river)

In SIMPER (similarities percentage), of 31 EC analyzed in this study, only 5 contributes with 84% of difference between basins

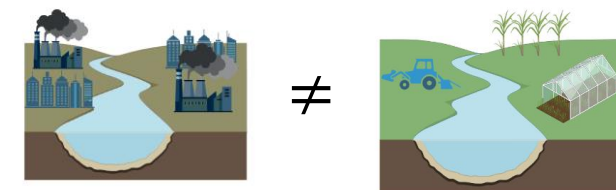
EC	Difference contribution (%)	Concentration (ng L ⁻¹)	
		Urban Industrial	Agricultural
Caffeine	59.1	780.0	198.0
Carbendazim	13.0	54.4	181.0
Tebuthiuron	4.4	3.0	43.7
Atrazine	3.9	38.3	64.6
Ametryn	3.5	3.7	37.2

Caffeine presented the higher contribution (59.1%) for the difference between basins, were more concentrated in urban/industrial basin due the untreated sewage discharge

Pesticides presented higher concentration in agricultural basins, indicating the impact of these activities

Of these five priority EC, only carbendazim (RQ=2.6) and ametryn (RQ=26.4) showed concentrations above WQC, indicating some level of environmental concern

Conclusions



- ✓ It's concluded that the emerging contaminant concentrations were dependent on the use and occupation of soils in the basins;
- ✓ The agricultural basin presented higher concentrations of pesticides while the urban/industrial basin of caffeine, being significantly different.

Funding



Process nº 2020/14988-1 Process nº 2014/50951-4

Vinicius S. Santos^a, Altair B. Moreira^b, Márcia C. Bisinoti^b, Cassiana C. Montagner^a