Sampling, sample treatment and analyses of selected biocides as candidates for monitoring measures

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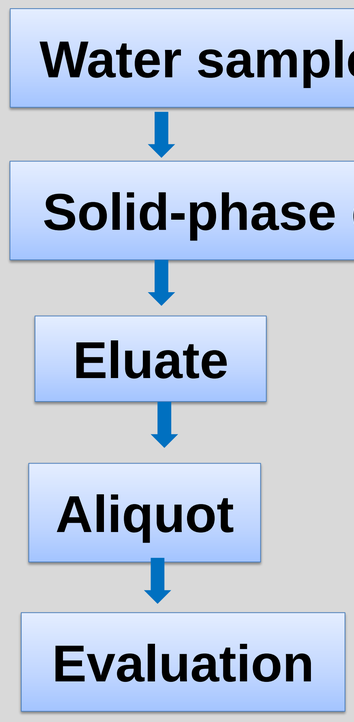
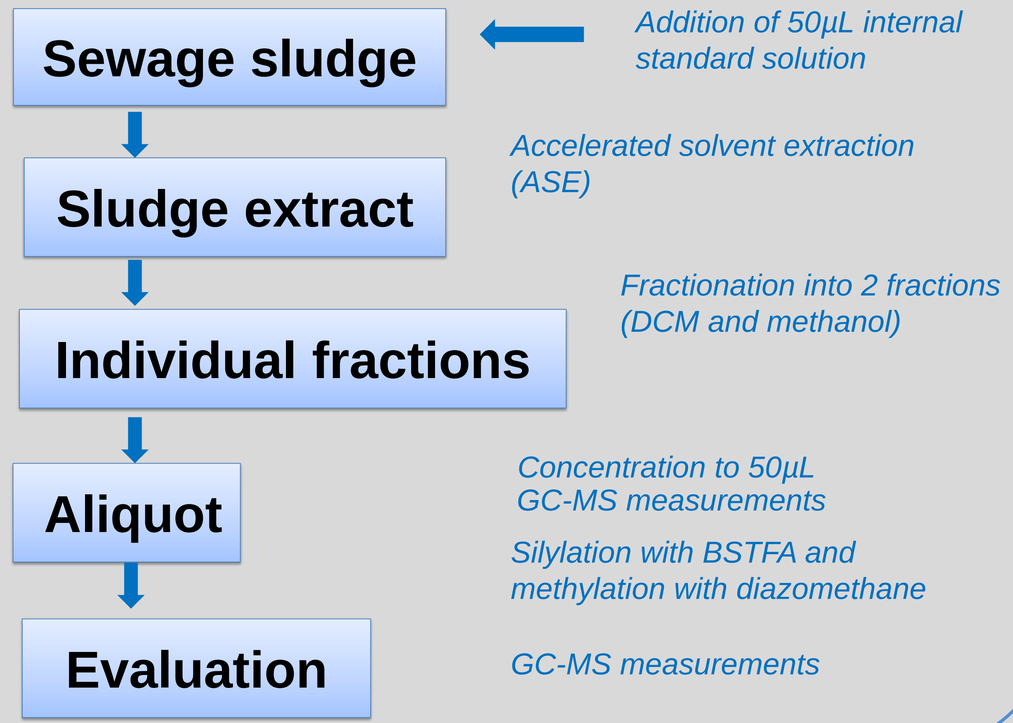
Analytical methods

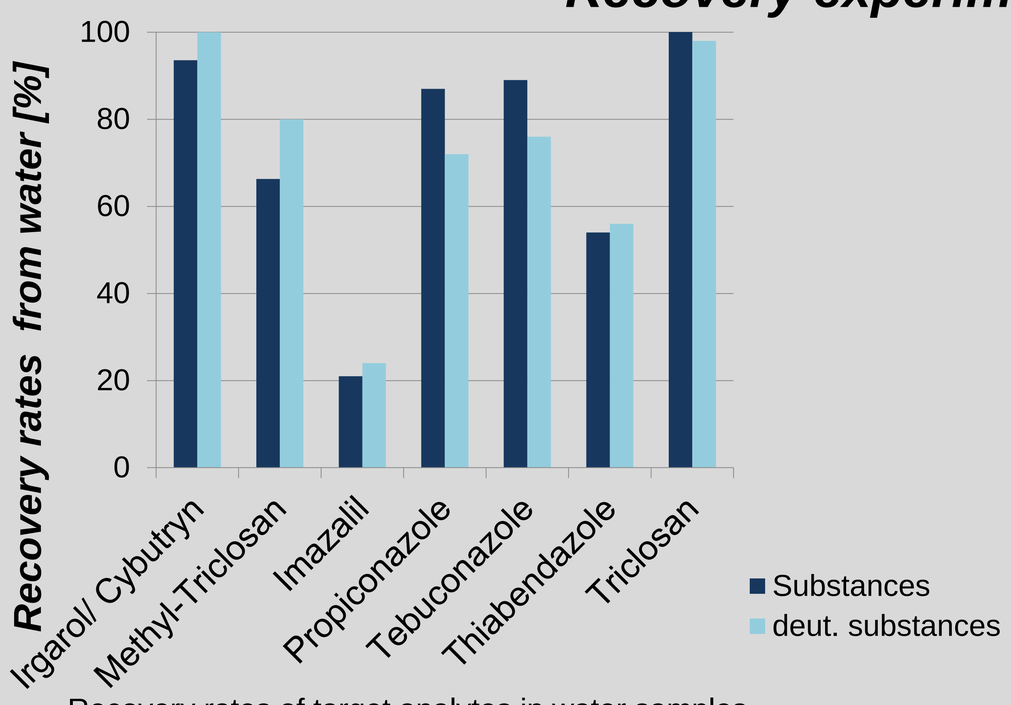




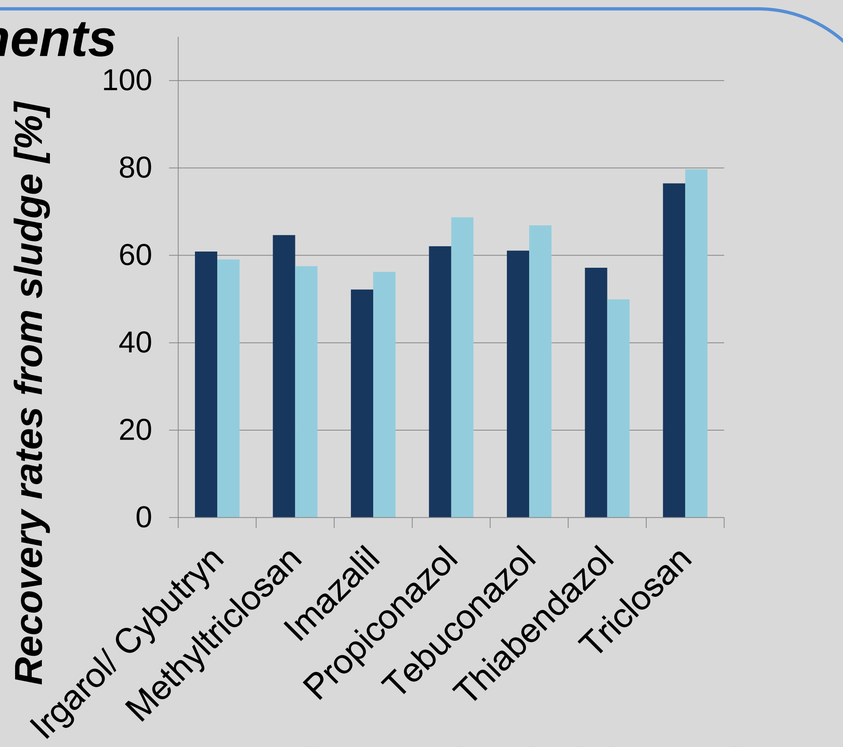
General preparation schemes.

The main goal of this project was to develop and validate a simple multi-parameter method for the analysis of biocides in abiotic matrices of various environmental compartments (sewage water, surface water and sewage sludge) for monitoring measures.

Recovery experiments



Recovery rates of target analytes in water samples.

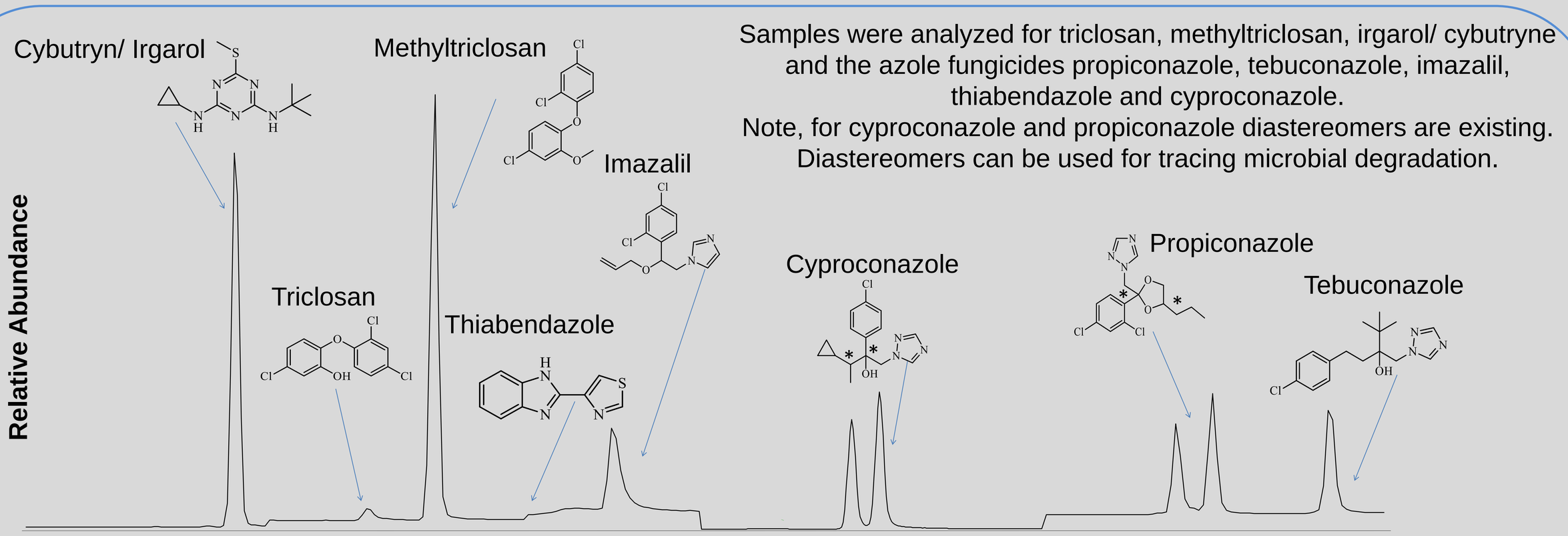


Recovery rates of target analytes in sludge samples.

GC-MS			
Substance	LOQ (est. from 0.1 ng $_{abs.}$)	[ng/L]	PNEC [ng/L]
Triclosan	0.	15.0	50
Methyltriclosan	0.01	0.4	15
Irgarol/Cybutryne	0.01	0.5	2.5
Imazalil	0.20	7.1	200
Thiabendazole	0.88	45.0	1,200
Cyproconazole	0.05	2.8	2,100
Tebuconazole	0.13	4.9	1,000
Propiconazole	0.08	2.9	6,800

GC vs. LC

LC-MS (Source: APCI)			
Substance	LOQ (est. from 1 ng $_{abs.}$)	[ng/L]	PNEC [ng/L]
Triclosan	not detectable	-	50
Methyltriclosan	not detectable	-	15
Irgarol/ Cybutryne	0.3	13.8	2.5
Imazalil	0.4	18.2	200
Thiabendazole	not detectable	-	1,200
Cyproconazole	1.4	68.5	2,100
Tebuconazole	1.6	80.6	1,000
Propiconazole	1.3	64.9	6,800



Samples were analyzed for triclosan, methyltriclosan, irgarol/ cybutryne and the azole fungicides propiconazole, tebuconazole, imazalil, thiabendazole and cyproconazole.
Note, for cyproconazole and propiconazole diastereomers are existing. Diastereomers can be used for tracing microbial degradation.

Selected Ion Recording (SIR) chromatogram of a standard solution with concentration of 1ng/µL.