Field Based Approaches for Identification of RBSP

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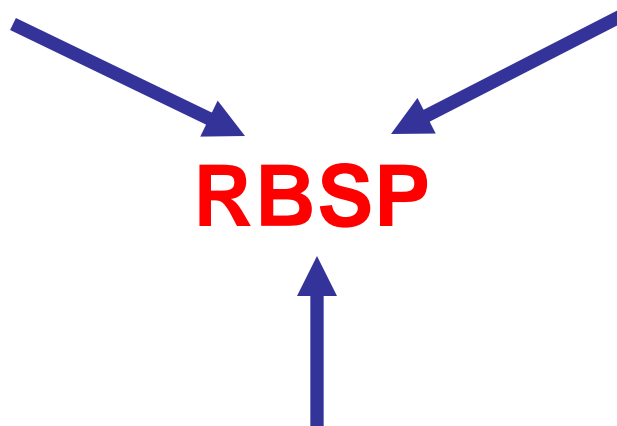
How to derive RBSP candidate substances?

Field-based
(EDA → non-target)

Monitoring based
(→ target)

RBSP

Modelling-based
(production and usage)

Suggestion: Identification and prioritization of RBSP based on monitoring

- Basis: Toxic Units (TU) for *Daphnia* (invertebrates), *Selenastrum* (algae) and *Pimephales* (fish)
- Threshold -3 (→ disappearance of sensitive species)
- 3 lines of evidence:
  - trend (R → 0 - 1)   existing data insufficient!
  - frequency of exceeding (0 - 1)
  - degree of exceeding (0 - 1)*
- Rank = t + f + d (0 - 3)

*>1000 ≡ 1, >100 ≡ 0.5, >10 ≡ 0.2, >1 ≡ 0.1

| english name			FR	ER	GR
english name		08	1.0	1.0	2.0
bis-(2-ethylhexyl)-phtalat	pl	31	0.9	1.0	1.9
azoxystrobin	fungic	105	0.3	1.0	1.3
dichlorvos	insectici	921	0.7	0.5	1.2
terbutylazine	herbicide	76	0.7	0.5	1.2
diuron	herbicide		1.0	0.2	1.2
diuron	herbicide		0.2	1.0	1.2
dioctyltin	antifouling co		0.1	1.0	1.1
tetrabutyltin	antifouling con		1.0	0.1	1.1
chlorfenvinfos	insecticide		0.8	0.2	1.0
perfluorononanoate	surfactant		0.5	0.5	1.0
benzo[e]pyrene			0.7	0.2	0.9
diazinon	insecticide		0.7	0.2	0.9
perfluorooctanoate	emulgator		0.4	0.5	0.9
indeno(1,2,3-c,d)pyrene			0.4	0.5	0.9
irgarol	herbicide		0.7	0.2	0.9
alachlor	herbicide			0.2	0.8
linuron	herbicide	89		0.2	0.7
2-hydroxy-atrazine	transf				0.7
4,4'- DDT	ins		0.5		
benzo[b]fluoranthene			0.6	0.	
chlor			0.6	0.1	
pirimicarb		180	0.4	0.2	0.6
ametryne	herbicide	25	0.1	0.5	0.6
dimethenamid	herbicide	19	0.4	0.2	0.6
benzo[k]fluoranthene		666	0.4	0.2	0.6
cyanazine	herbicide	113	0.4	0.2	0.6
chloroxylenol	anti-microbial	35	0.5	0.1	0.6
desethylterbutylazine	transformation product	356	0.4	0.1	0.5
prometryn	herbicide	263	0.4	0.1	0.5
tolclofos-methyl	fungicide	97	0.3	0.2	0.5
metoxuron	herbicide	106	0.3	0.2	0.5
			0.3	0.2	0.5
			0.3	0.1	0.4
			0.3	0.1	0.4
			0.2	0.2	0.4
			0.2	0.2	0.4

Often observed: Predicted effects based on target monitoring ≠ measured effects

⇒ **Effect-Directed Analysis (EDA)**

- Site selection: Effect monitoring + expert knowledge on sites and sinks

- No *a priori* knowledge on or selection of compounds required

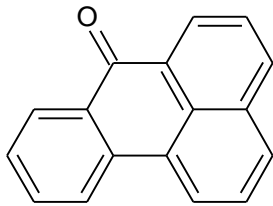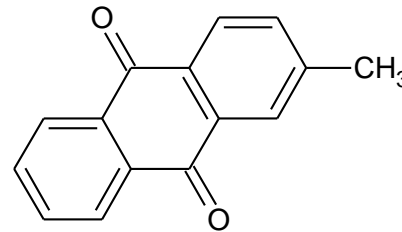- Applicable to any matrix (water, sediments, biota, …)
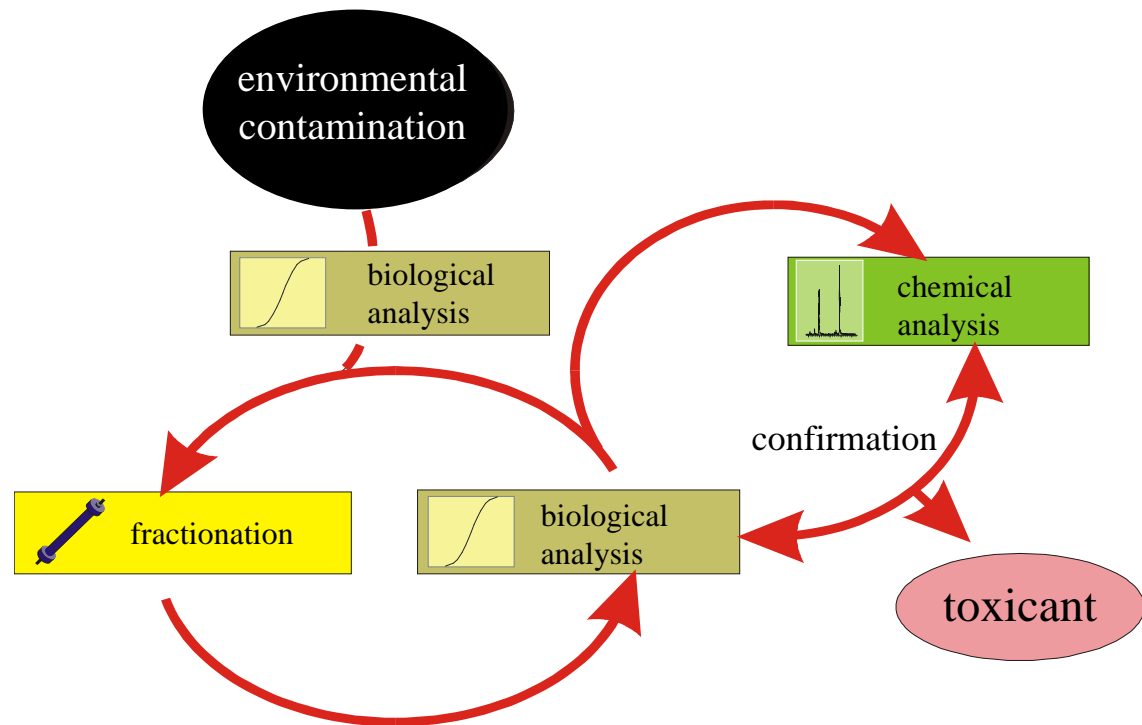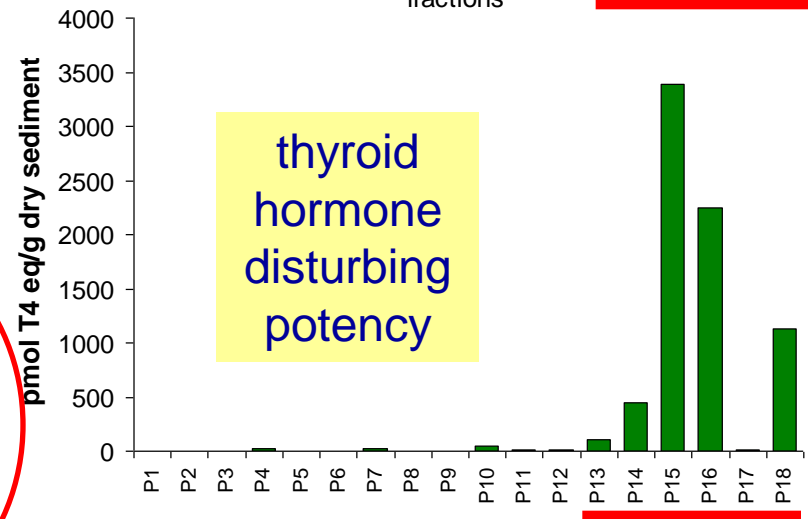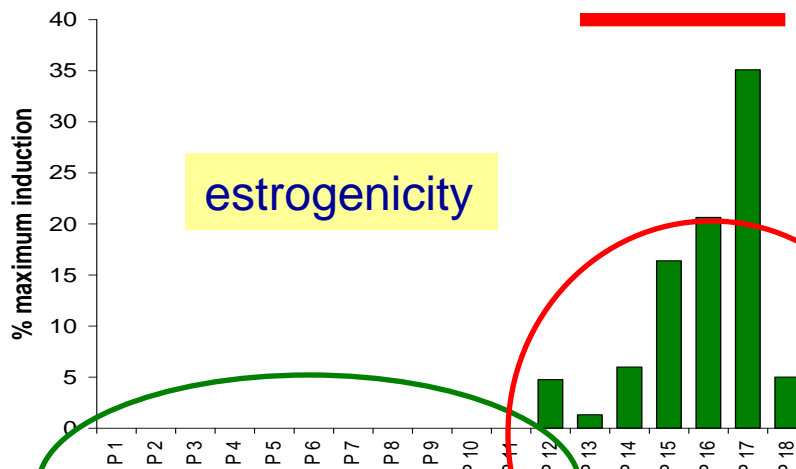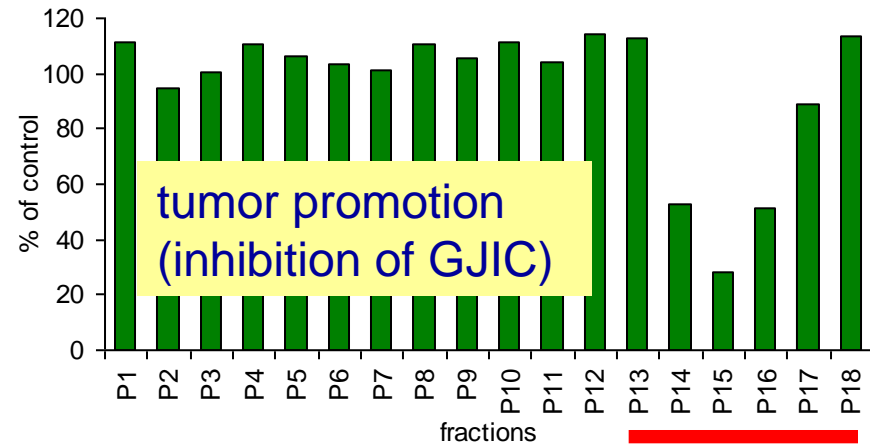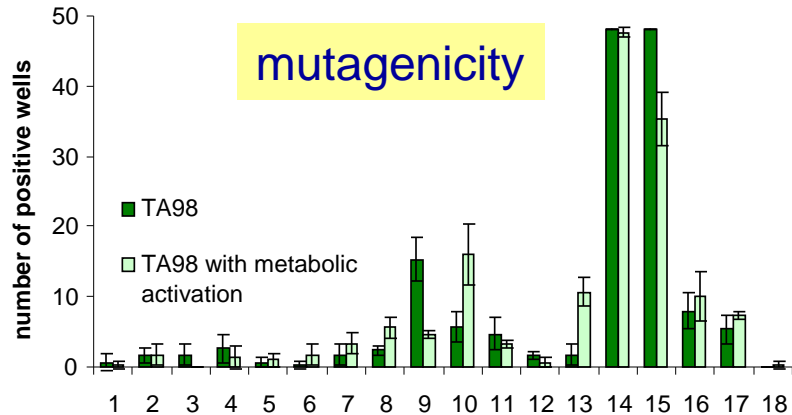
EDA in sediments

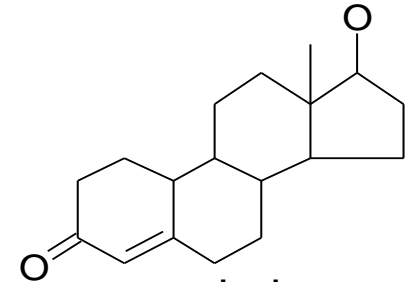**Non-regulated compounds identified by EDA studies in sediments (algal toxicity, endocrine disuption, mutagenicity)**
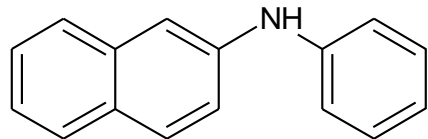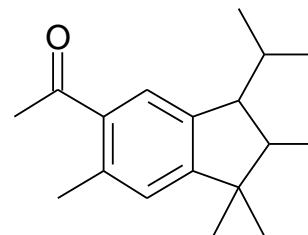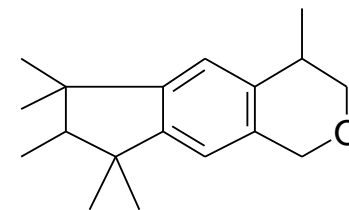

benzanthrone
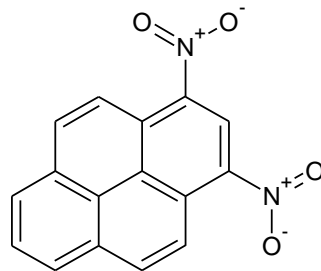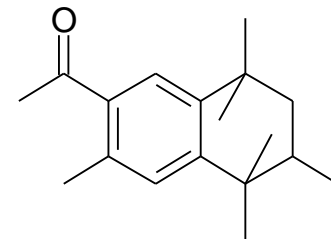
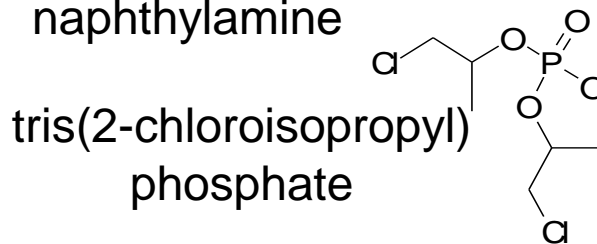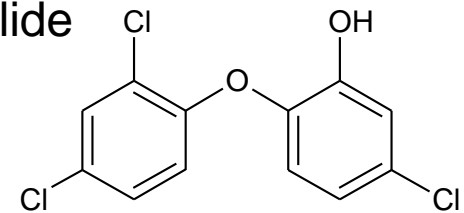dinitropyrenes

2-methylanthra-quinone

nandrolone

N-phenyl-2-naphthylamine

tris(2-chloroisopropyl) phosphate

traseolide

galoxolide

tonalide

triclosan

Thank you for your attention!