Norman Interlaboratory Study experience with CFIS. Improvements, adaptations and conclusions.

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INDEX:

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Sectors of activity
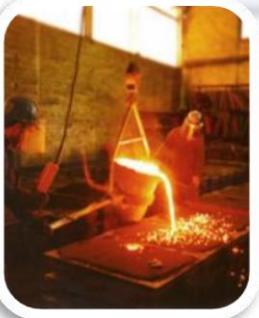
AQUALOGY- LABAQUA

ENVIRONMENTALSERVICES

Monitoring, inspection and environmental consultancy: Industrial environment, natural environment.
Chemical risk (REACH).
Biosecurity: Maintenance of installations and microbiological air quality studies.
Integrated Odor Management (Olfactometry).
Mathematical modeling of air.

SERVICES HEALTH & SAFETY

Occupational risk prevention (ORP) consultancy.
Industrial and occupational safety
Applied ergonomics
Industrial hygiene
Applied psychosociology
Asbestos

ANALYTICAL SERVICES

Analytical control of the whole range of environmental matrices (water, air, solids).
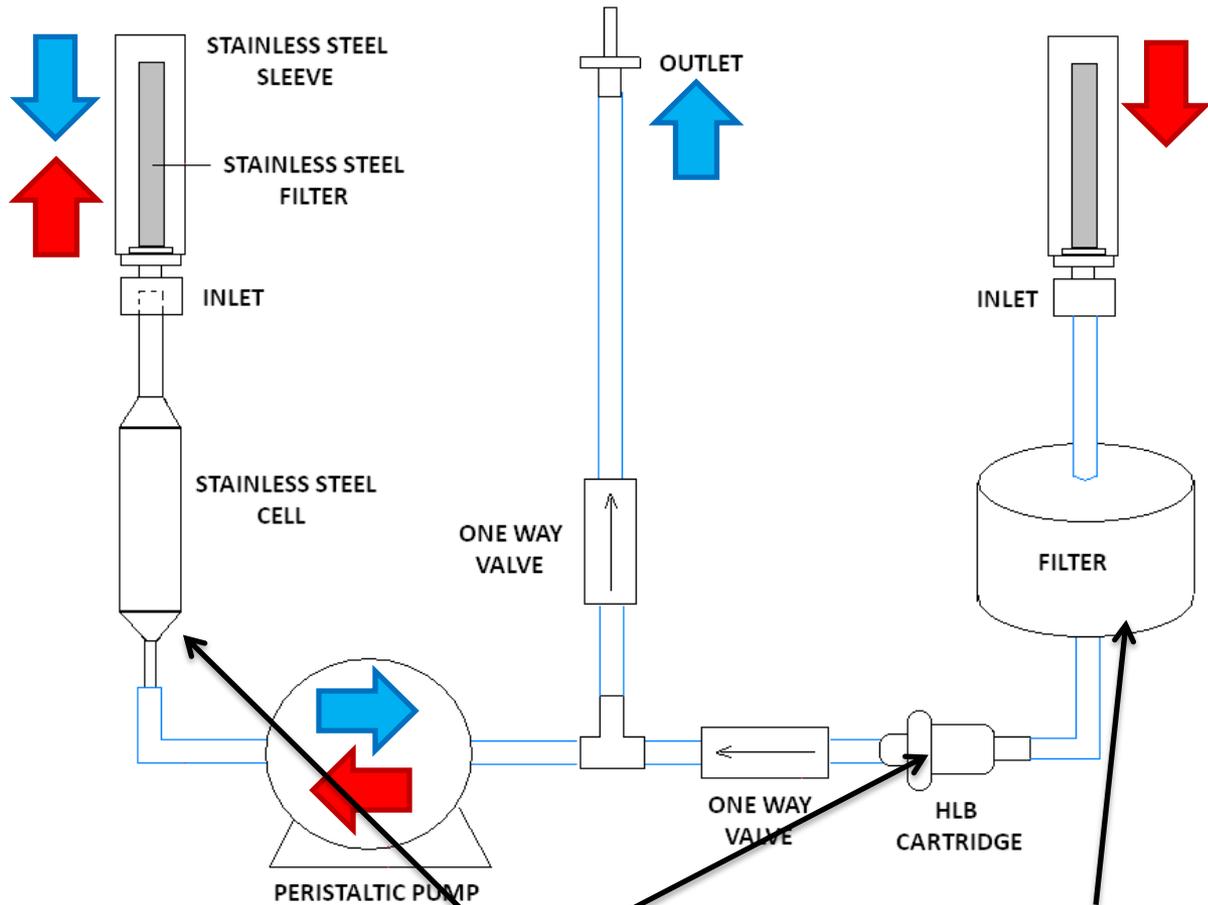Physical-chemical analyses (organic, metals).
Microbiological analyses.
Toxicological and specific waste analyses.
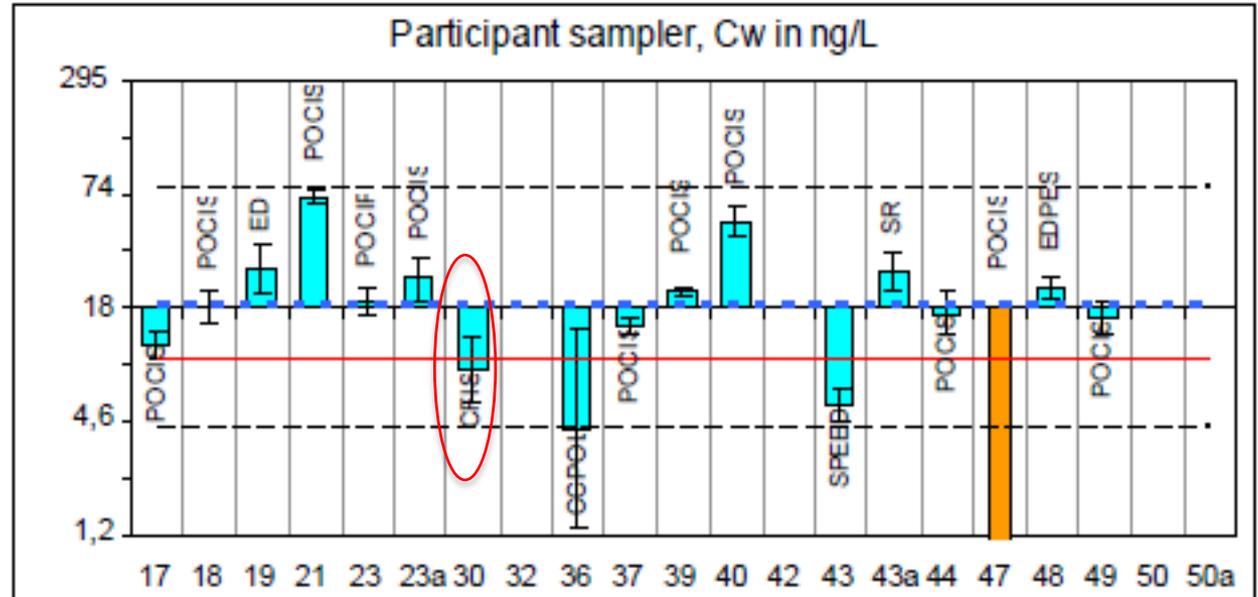Development of new analytical methods.

CONTINUOUS FLOW INTEGRATIVE SAMPLER (CFIS). THE ACTIVE/PASSIVE SAMPLER

Soluble and particulate fraction
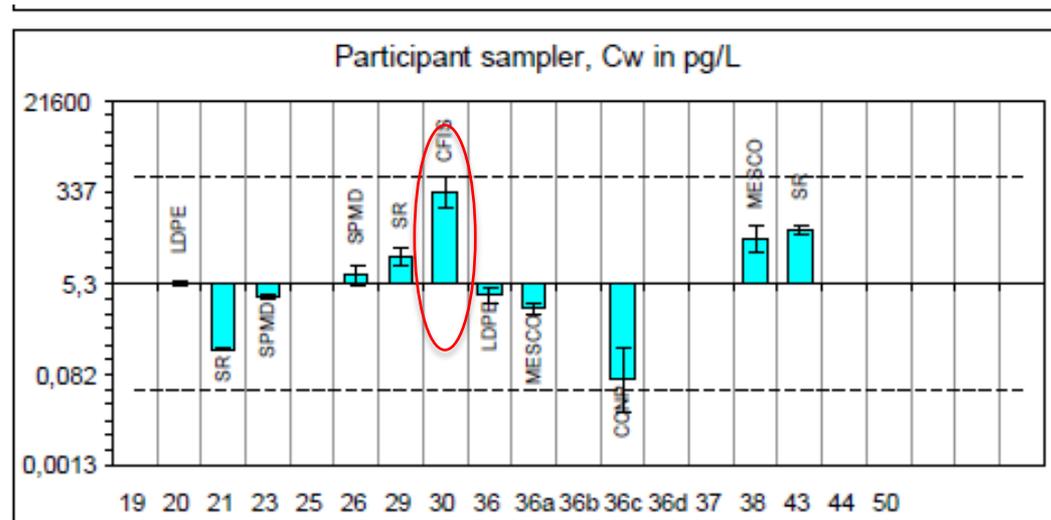
CFIS. RESULTS FOR POLARS PESTICIDES

- **LEARN AND IMPROVEMENTS:**
- ADEQUATE RESULT
- IMPROVING BY MEANS OF INTRODUCTION OF IS TO INCREASE THE ACCURACY

CFIS. RESULTS FOR Brominated diphenyl ethers – PBDE

	Participant Sampler Cw pg/L
Median	5,3
s	12,8
GeomMean	5,6
n	11
Outliers	0
Spot samples	
Period 1	#N/A
Period 2	#N/A
LOD	#N/A

Participant sampler, Cw in pg/L

- **VERY BIG DISPERSION IN THE CW VALUES.**
- **PROBLEMS WITH LOQ???   YES FOR CFIS.**
- **IMPROVE R_s CALCULATION (T^a efect, …)**

- **PBDEs- CFIS-LOQ:**
- **ANALYTICAL: 0,05 ng/PDMS.**
- **DEVICE: Rs = 10 ml/day.**
- **LOQ for 21 days: 0,24 ng/L as FWAC.**

- **IMPROVEMENTS:**
- **ANALYTICAL METHOD**
- **INCREASE Rs**

- **ANALYTICAL METHOD**
- **BDEs ANALYSIS BY MEANS OF GC-NCI-MS/MS CAN REDUCE LOQ TO 0,01** ng/twister and improve the **LOQ OF THE DEVICE TO 0,046** ng/L

- **INTRODUCE OTHER PDMS FORMATS**
- **INTRIDUCTION OF PDMS IN SEMI-TUBE FORMATS CAN INCREMET THE SURFACE AND Rs NEAR TO 200** mL/day. Reduce the **LOQ** to 0,023 ng/L

- **COMBINE BOTH**
- **REDUCE LOQ BY ANALYTICAL METHOD IN 1/5**
- **INCREASE THE Rs TO NEAR 200** ml/min, 1/20
- **ESTIMATED LOQ WITH IMPROVEMENTS: 1/100 NEAR TO 0,0025 ng/L (2,5 pg/L).**

• VOLATILE ORGANIC COMPOUNDS TO COVER WFR PRIORITY POLLUTANTS¿?

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Nº	Nombre de la sustancia	Nº CAS [1]	NCA-MA [2] Aguas superficiales continentales [3]	NCA-MA [2] Otras aguas superficiales	NCA-CMA [4] Aguas superficiales continentales [3]	NCA-CMA [4] Otras aguas superficiales
(4)	Benceno	71-43-2	10	8	50	50
(10)	1,2 dicloroetano	107-06-2	10	10	no aplicable	no aplicable
(11)	Diclorometano	75-09-2	20	20	no aplicable	no aplicable
(29 bis)	Tetrachloro-ethylene [7]	127-18-4	10	10	no aplicable	no aplicable
(29 ter)	Tricloroetileno [7]	79-01-6	10	10	no aplicable	no aplicable
(31)	Triclorobencenos	12002-48-1	0,4	0,4	no aplicable	no aplicable
(32)	Triclorometano	67-66-3	2,5	2,5	no aplicable	no aplicable

- **No many passive sampler to VOCs.**
- **Some costumers demand us to control influents WWTD and spot spillages.**

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- **CFIS CONFIGURATION TO VOCs**

VOCs will be retained by an adsorbent made a mixture of alginic acid and activated carbon.
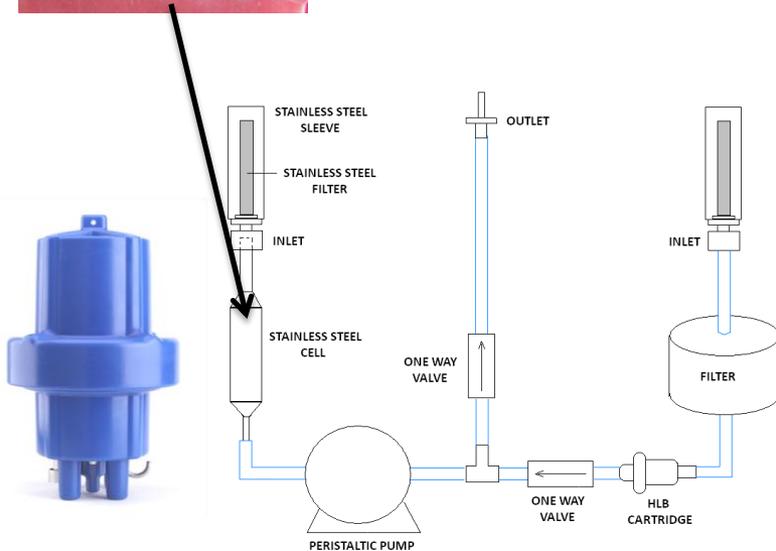
Compound	R(s) ml/day	LOQ 1 Day (µg/L)	LOQ 7 Day (µg/L)
Dichloromethane	5.8	7.29	1.04
Chloroform	4.0	10.53	1.50
Carbon tetrachloride	5.5	7.79	1.11
Benzene	8.1	5.27	0.75
1,2-Dichloroethane	3.0	14.13	2.02
Trichloroethene	9.0	4.70	0.67
Toluene	5.9	7.18	1.03
Tetrachloroethene	6.6	6.39	0.91
Ethylbenzene	6.0	7.07	1.01
m+p-Xylene	3.9	21.71	3.10
o-Xylene	2.7	15.93	2.28

SIMULTANEOUS DETERMINATION OF NON-POLAR, POLAR AND VOCs

PASSIVE SAMPLER ANALYSIS AND TESTING WILL BE REQUIRED ACREDITED UNDER 17025.

PAHS.
PCBs
BDEs
POCs

ISO/IEC 17043:2010 Conformity assessment-General requirements for proficiency testing. Specifies general requirements for the competence of providers of proficiency testing schemes and for the development and operation of proficiency testing schemes.

INCREASE THE FINAL VALUE OF THE INTECALIBRATION STUDIES

ielab is a aqualogy company, with a wide experience in the analytical sector:

The services are aimed at providing our customers with tools to move towards a TOTAL QUALITY MANAGEMENT in their companies

➢ Company accredited as Proficiency Testing Schemes provider with doc. nr. 2/PPI007, based on the ISO 17043.

➢ **IELAB EXPERIENCE IN-SITU PROFIFENCY TEST.**

➢ ISO 9001:2008 Certificate (reference materials)

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ISO-17043 PERMITS

ADD MORE VALUE TO:

1. Calculation of the assigned value and its uncertainty

2. Procedure for the identification of outliers

3. Procedure for proficiency assessment

PERMITS TO PARTICIPANTS:

• Method validation
• Confirmation that the initial methods validation is right
 (Comparing the results of accuracy and precision)
• Determination of systematic mistakes
• Apply improvements after comparing with other laboratories
• Obtain information of other used methods
• Promotion of collaboration among laboratories
• Demonstration of technical self-competence to third parties.

THANK YOU