DIGESTION IN A HIGH PRODUCING LAB

CHRISTIAN MAGNUSSON

REBECKA GRANAT

2018-03-07

ALcontrol → SYNLAB

- 35 countries – 4 continents
- 19 000 coworkers
- 500.000.000 analysis/year
- Linköping, Umeå, Karlstad, Malmö
  - Linköping environmental
  - 100 coworkers

The Beginning

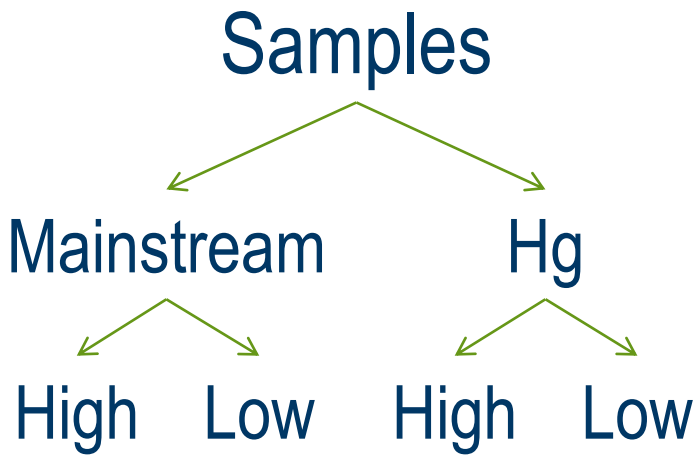
The End - a cleaner room

Why the change?

- Lower background
- Better working environment
- Higher capacity
- Cleaner extracts
- Less filtrations

Working list

- Barcodes
- Mainstream 140-160 samples/day
- Hg 60-90 samples/day



Our current system

- Three Ultrawaves and one TraceCLEAN

ICP-MS and ICP-OES

- Quartz tube for the majority
- Teflon tube for Silicon (Si)
- Acids: HNO_3, HCl and Aqua regia

Sample preparation

- 15 rack
- 5 ml sample + 1,25 ml acid
- Pressurize 40 bar and 170°C
- Dilute x2 for ICP-MS
- Autosampler

FIMS400 and PSA Merlin

- Disposable glass tube for mercury (Hg)
- Acids: HNO_3
- Leaching of tubes
- Autosampler

Cleaning

- Tubes and covers are cleaned in a TraceCLEAN
- Acid steam cleaning
- Rinse with MQ
- Tubes and covers blanksolution (acid and MQ)
- Tubes and covers rinsed with MQ

Low background

- HEPA-filter
- Lab clothes
- Cleaning routines
- Cover the windows
- Elimination of steps
- Correct specification of acid

Working procedure

- Contamination - Al, Zn, Cr, Mn, Ni, Fe and Cu
- Gloves, tweezer and tissue
- Dispenser
- Crosscontamination
- Monitoring blanks

Examples of results

Process blanks	2013	2018
Al	22	1.5
Cr	1.0	0.024
Mn	0.19	0.017
Cu	0.51	0.030
Zn	6.4	0.14
Cd	0.032	0.005

Conclusion

- Control of our background
- Working environment
- Over 130000 samples so far (2014)
- 10-12 batches/day ICP
- 4-7 batches/day Hg