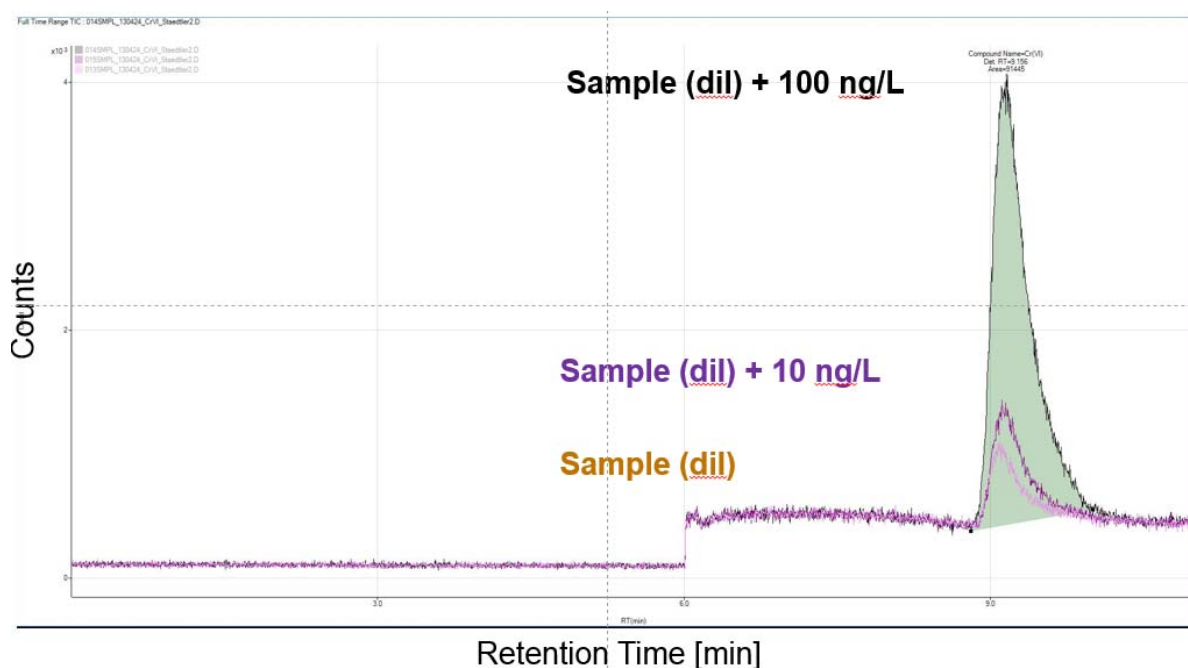


Determination of chromium(VI) in toy migration solution applying IC-ICP/MS



Chromate (Cr(VI)) is considered toxic and potentially carcinogenic for which reason its concentrations in consumer products such as toys should be as low as possible. EU directive 2009/48/EC defines limits for chromate migrating from toys. Here, the hydrochloric acid migration solutions are diluted with a buffer. 2000 μ L of this solution is injected by Metrohm intelligent Preconcentration Technique and Inline Matrix Elimination (MiPCT-ME). Detection occurs by ICP/MS.

Results

	Conc. blank [ng/L]	Conc. sample [ng/L]	Conc. sample blank corrected [ng/L]
Crayon migration solution	18	18	< 10

Sample

Toy migration solution

Sample preparation

1 g of sample is extracted in 50 mL of 0.25% hydrochloric acid. This solution is neutralized and injected applying MiPCT-ME.

Columns

Metrosep A Supp 5 - 250/4.0	6.1006.530
Metrosep A Supp 4/5 Guard/4.0	6.1006.500
Metrosep RP 2 Guard/3.5	6.1011.030
Metrosep A PCC 1 VHC/4.0	6.1006.320

IC Solutions

Eluent	15.4 mmol/L sodium carbonate 4.8 mmol/L sodium hydrogen carbonate
Transfer solution	50% acetone
Neutralization buffer	8 g/L sodium carbonate 0.52 g/L sodium hydrogen carbonate

Parameters

Flow rate	0.8 mL/min
Injection volume (MiPT)	2000 µL
P _{max}	15 MPa
Recording time	11 min

Parameters ICP/MS

ICP-MS mode	Single-quad
Mass	52
He flow	4.0 ml/min
Integration time	0.3 s

Analysis

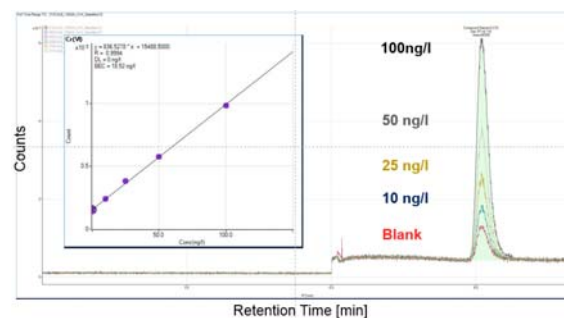
ICP/MS detection

Instrumentation

930 Compact IC Flex Deg	2.930.1160
Agilent 8800 ICP-QQQ	
858 Professional Sample Processor	2.858.0010
800 Dosino	2.800.0010
IC equipment: MiPCT-ME	6.5330.160
Remote box	6.2148.010



Calibration



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