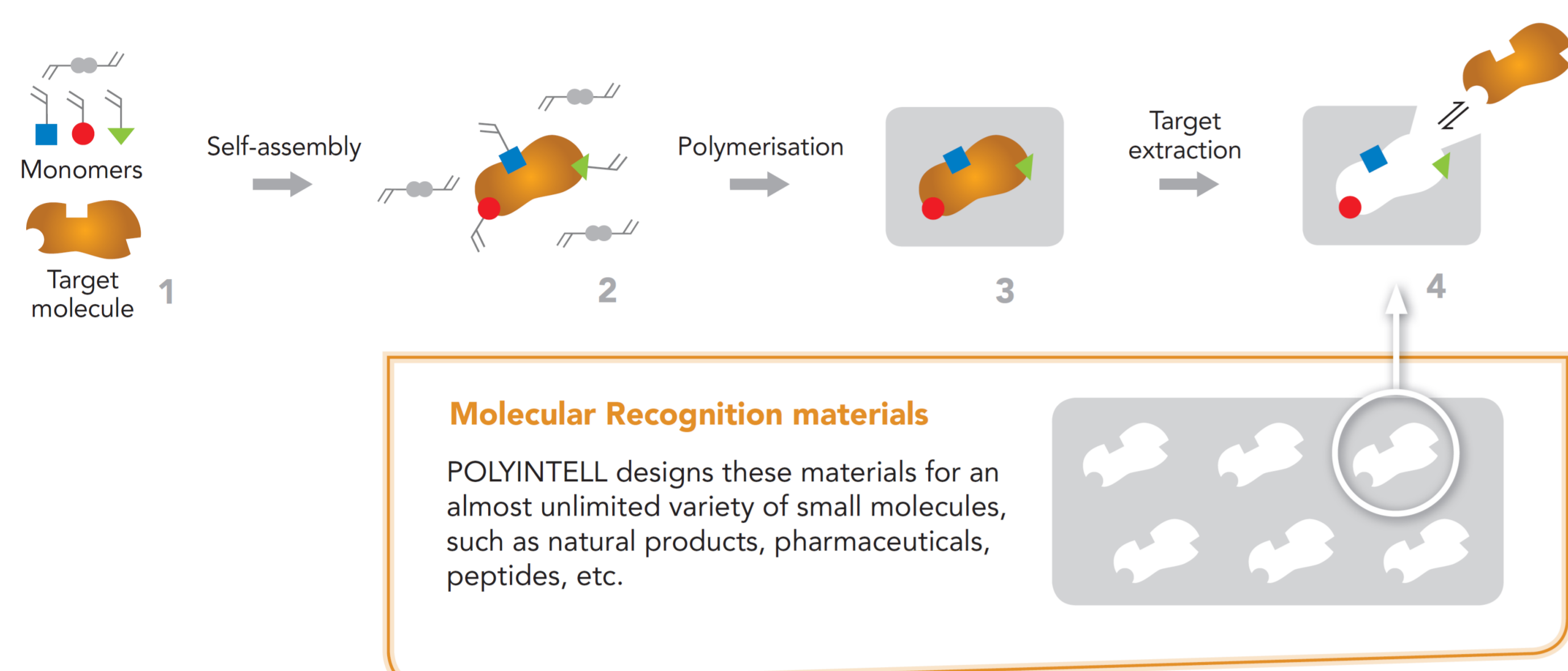


Bisphenols are suspected to disrupt the endocrine system. More and more reports identify the presence of Bisphenol A in aquatic environment and consequently food and biological media and has been banned in plastic infant feeding bottles in several countries (Canada, EU (directive 2011/8/EU)). To analyze these complex matrices, an efficient clean-up step is crucial to improve the sensitivity and the specificity before analysis. Based on molecularly imprinted polymers, we have developed a powerful method to clean-up and pre-concentrate all Bisphenols.

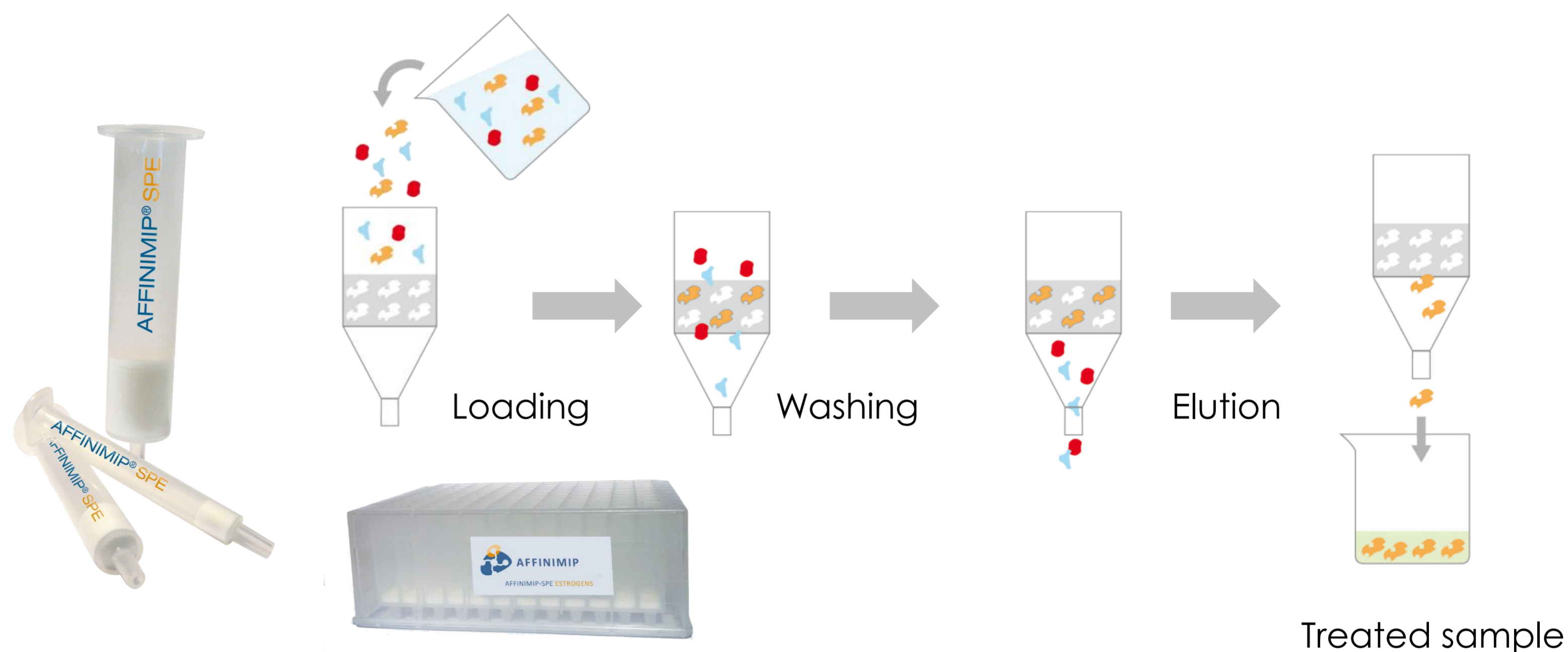
Principle of AFFINIMIP® SPE

Molecularly imprinted polymers is a polymer having a « memory » of the shape and functional group positions of a template molecule.



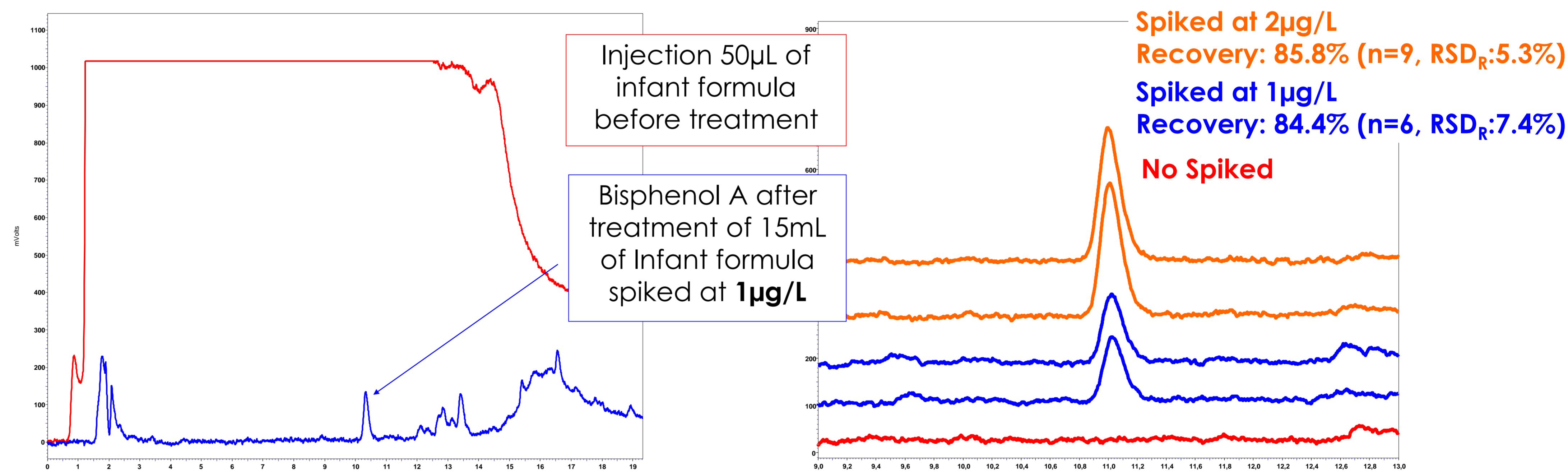
Application of AFFINIMIP® SPE

Based on molecularly imprinted polymers, AFFINIMIP®SPE is a highly selective SPE.



AFFINIMIP® SPE Bisphenols : Bisphenol A in Infant formula

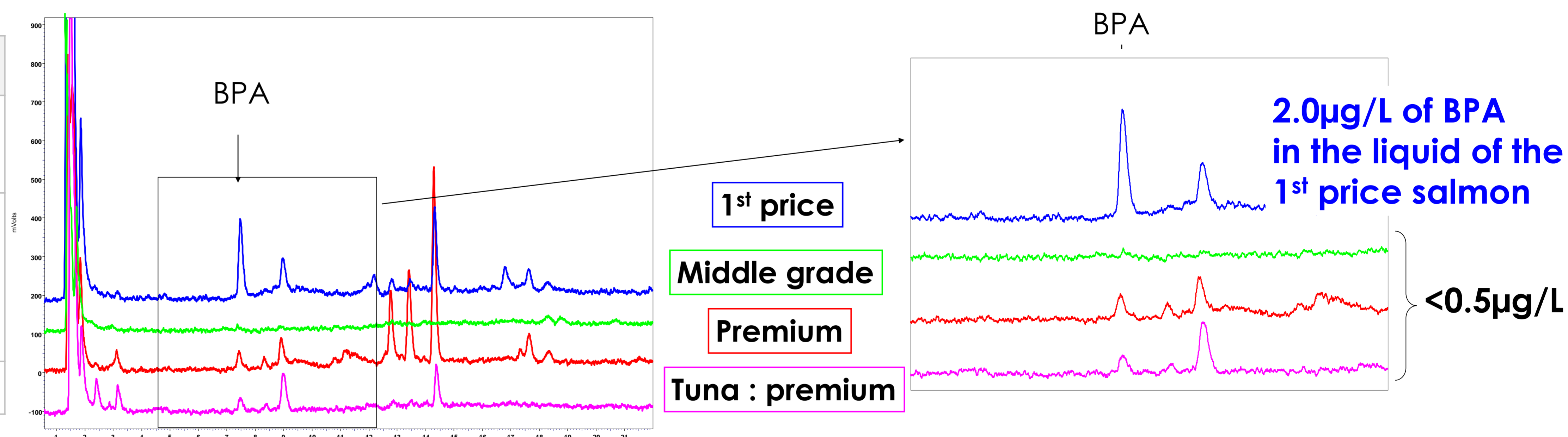
Step	Solvent
Loading	Up to 15mL of Infant Formula
Washing	10mL Water 6mL 60/40 Water/ACN Dry 30 seconds
Elution	3mL MeOH



AFFINIMIP® SPE Bisphenols : Bisphenol A in Canned food

3 brands of Salmon and one brand of Tuna were tested : Liquid from canned food were directly loaded on AFFINIMIP®SPE Bisphenols after a simple filtration

Step	Solvent
Loading	10mL of Canned food's liquid
Washing	10mL Water 6mL 60/40 Water/ACN Dry 30 seconds
Elution	3mL MeOH



AFFINIMIP® SPE Bisphenols : 18 Bisphenol analogs in Breast Milk

Very satisfactory detection and quantification limits

Highly satisfactory Recovery yields with results close to 100 % for each molecule

	Bisphenol A	Bisphenol B	Bisphenol AP	Bisphenol AF	Bisphenol BP	Bisphenol C	Bisphenol Cl2	Bisphenol E	Bisphenol PH
Detection limit (µg/kg)	<0,003	0,006	0,002	0,001	0,002	0,003	0,001	0,006	0,003
Quantification limit (µg/kg)	<0,010	0,020	0,007	0,003	0,006	0,009	0,003	0,018	0,009
Recovery %* for 0,1ng in human breast milk	97	96	100	100	108	92	102	96	94
Recovery %* for 10ng in human breast milk	105	102	92	96	99	97	93	102	102

	Bisphenol S	Bisphenol F	DHDPE	Bisphenol FL	Bisphenol Z	Biphenyl-4,4'-diol	Bisphenol M	Bisphenol P	Bis-2(hydroxyphenyl)methane
Detection limit (µg/kg)	0,001	0,006	0,030	0,004	0,002	0,005	0,002	0,004	0,030
Quantification limit (µg/kg)	0,003	0,018	0,100	0,012	0,006	0,015	0,010	0,012	0,100
Recovery %* for 0,1ng in human breast milk	100	103	104	103	100	109	96	97	108
Recovery %* for 10ng in human breast milk	93	104	100	96	103	104	94	99	109

*Recovery yield obtained by GC-MS/MS by interpolation in the calibration curve within the linear dynamic range

By courtesy Y. Deceuninck, E. Bichon, P. Marchand, C.-Y. Boquien, A. Legrand, C. Boscher, J. P. Antignac, B. Le Bizec, ONIRIS-LABERCA according to the article 'Determination of bisphenol A and related substitutes/analogs in human breast milk using gas chromatography-tandem mass Spectrometry' in *Anal Bioanal Chem*, 407(9), 2485-2497 (2015)

Conclusion

A new AFFINIMIP® SPE has been developed for extraction of Bisphenols (18 analogs evaluated) from complex matrices and more than 80% recovery were obtained with an efficient clean-up. Thanks to the efficient clean-up and a pre-concentration process, a reliable quantification of Bisphenol A and at low concentration (1 and 2µg/L) using a fluorescence detector is now possible.