

OCCURRENCE OF HALOGENATED FLAME RETARDANTS IN BELGIAN FOOD SAMPLES

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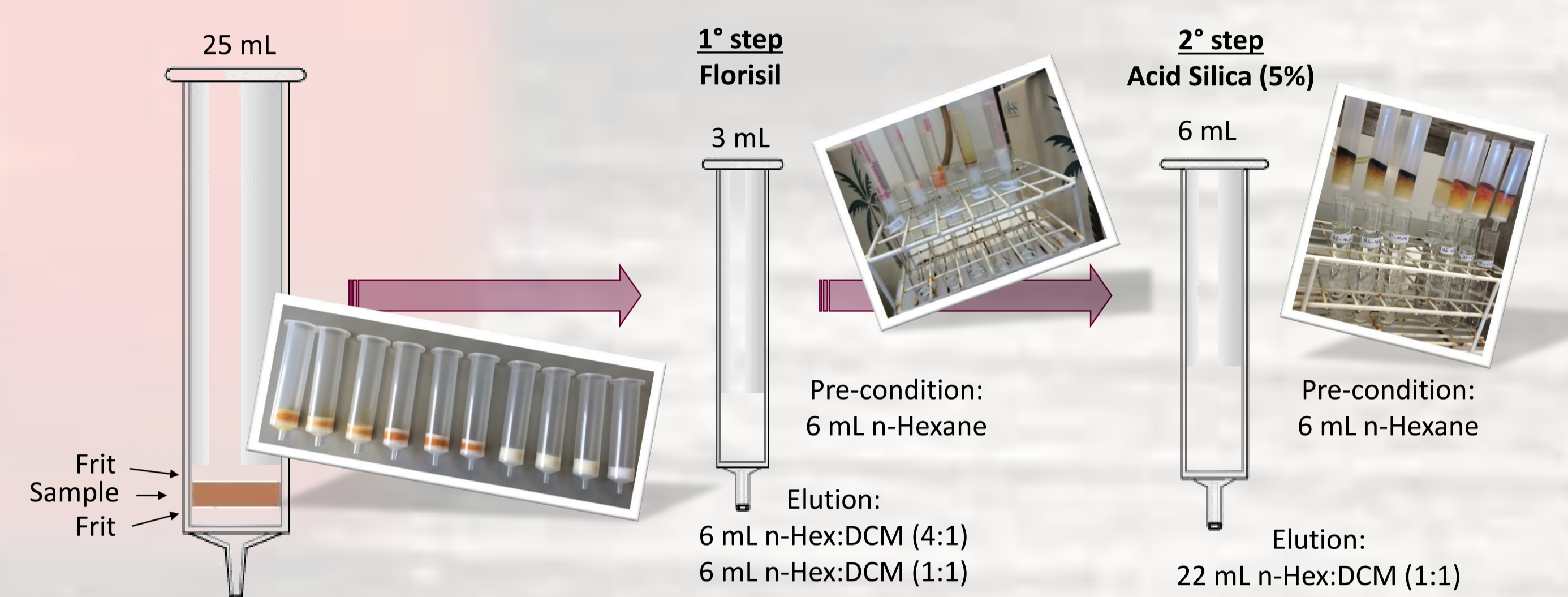
INTRODUCTION and OBJECTIVES

- ✓ Lack of data on the presence of brominated flame retardants (BFRs) in food → incorrect estimation of the health risks.
- ✓ EFSA indicated that it is not possible to perform an accurate risk assessment due to the lack of data on the occurrence in food and consequently on the exposure to BFRs *via* the diet.
- ✓ This project follows up the European Commission Recommendation 2014/118/EU¹ on the monitoring of BFRs in food.
- ✓ A simple two-step clean-up method, based on GC/ECNI-MS, for the determination of PBDEs and emerging halogenated flame retardants (EHFRs) in food was developed and validated².
- ✓ 183 composite food samples, belonging to 15 different food categories were analyzed in the frame of the project.

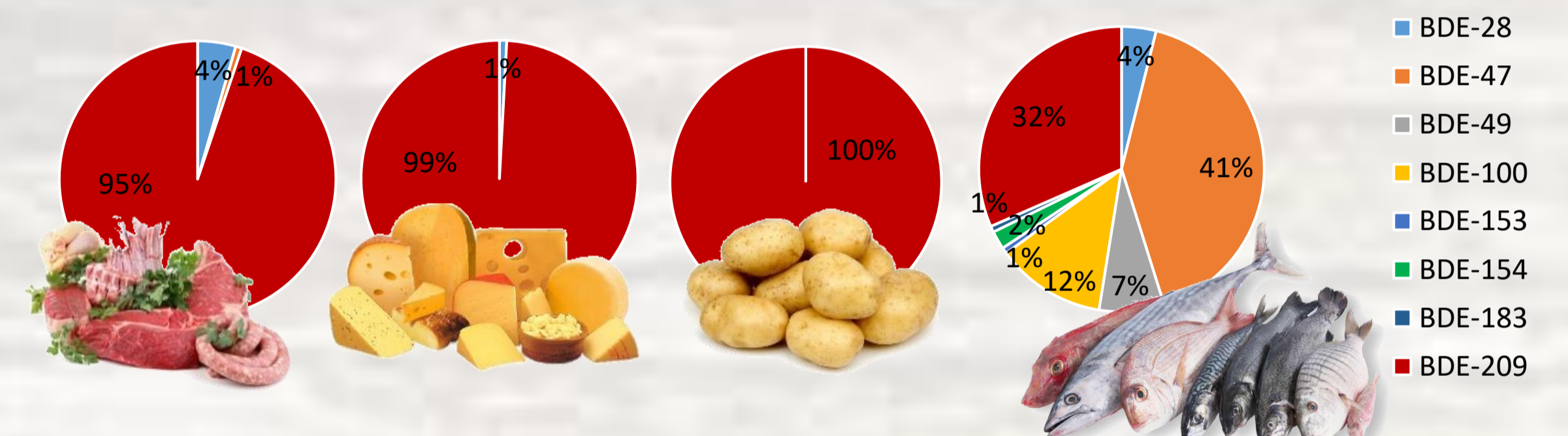
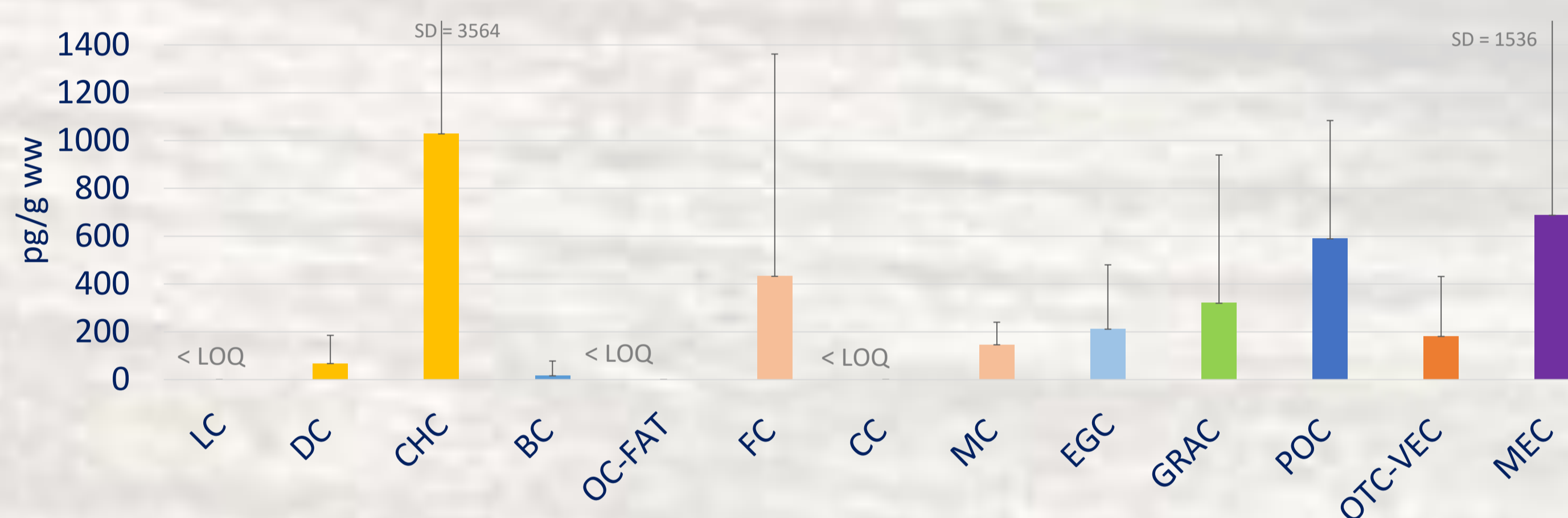
Target compounds	Food categories – ID code – n. of samples
PBDEs	Liquid milk composite LC; n=13
BDE-28	Dessert/sweet composite DC; n=3
BDE-47	Cheese composite CHC; n=22
BDE-49	Baby-food composite BC; n=18
BDE-100	Oil/fat composite OC-FAT; n=9
BDE-99	Fish composite FC; n=51
BDE-154	Crustacean composite CC; n=7
BDE-153	Mussel composite MC; n=3
BDE-138	Egg composite EGC; n=4
BDE-183	Grain composite GRAC; n=7
BDE-209	Potato composite POC; n=4
	Other food composite OTC; n=5
	Vegetable composite VEC; n=2
	Meat composite MEC; n=35

MATERIALS and METHODS

- ✓ Sample weight: 0.2 – 1 – 2 g (depending on the lipid content).
- ✓ Addition of Internal Standard (IS: BDE-103; BDE-128; ¹³C-BDE-209; ¹³C-TBB; ¹³C-TBPH; ¹³C-anti-DP; ¹³C-syn-DP).
- ✓ Solid-liquid extraction with 5 mL acetonitrile:toluene (9:1, v/v).
- ✓ Clean-up performed on Florisil® and acidified silica (1 g, 5% H₂SO₄ w/w).
- ✓ Target analysis performed with a GC-ECNI/MS, operated in SIM.
- ✓ LOQs: 50 pg/g ww for TBA, 5 pg/g ww for PBDEs, 100 pg/g ww for BDE-209, 20 pg/g ww for HBB and DPs, 10 pg/g ww for BTBPE, 200 pg/g ww for TBB and TBPH.



PBDEs



RESULTS and DISCUSSION

- ✓ **LB mean levels for ΣPBDEs** from 17 ± 61 pg/g ww in BC to 1,029 ± 3,564 pg/g ww in CHC; ΣPBDEs up to 16,888 pg/g ww (emmental).



- ✓ **Mean distribution of PBDEs** in the analyzed food categories: CHC (28 %) > MEC (19 %) > POC (16 %) > FC (12 %).

