

Poster session 1 - Environmental Chemistry

P-0091

DIOXINS IN HUMAN MILK FROM DIFFERENT REGIONS OF FRANCE: PILOT OF THE FRENCH LONGITUDINAL STUDY OF CHILDREN (ELFE)**M. L. BIDONDO¹, J. F. FOCANT², A. SAOUDI¹, N. FRERY¹, A. OLEKO¹, H. LERIDON³, L. GULDNER¹, S. VANDENTORREN¹**¹ French Institute for Public Health Surveillance, Environment and Health, Saint-Maurice, France² CART Mass Spectrometry Laboratory, Organic and Biological Analytical Chemistry, Liege, Belgium³ Institute of Demography, Demography, Paris, France

Surveillance of the exposure to chemicals among pregnant women and their child is particularly important and constitute one of the objectives of the on-going Elfe (French longitudinal study of children) cohort study, by the use of biomarkers.

The present work focused on the determination of polychlorodibenzodioxines (PCDD), polychlorodibenzofuranes (PCDF) and dioxin-like polychlorinated biphenyls (DL-PCBs) levels in the breast-milk of the mothers included in a pilot study of Elfe, carried out in the fall of 2007 in a random sample of children of several counties in France.

A set of 35 compounds were tested: seven 2,3,7,8-substituted PCDDs, ten 2,3,7,8-substituted PCDFs, 12 DL-PCBs (four non-ortho-PCBs, eight mono-ortho-PCBs) and six NDL-PCBs.

Fourty four samples of breast-milk were liquid-liquid extracted and analyzed with gas chromatography coupled to high resolution mass spectrometry (GC-HRMS). The limits of detection and quantification were optimized to obtain a good selectivity and sensitivity.

Mothers were aged from 24 to 41 years old (mean and median: 32 years) and 50% (n=22) were primiparous or secundiparous. The geometric mean concentration for total TEQ (PCDD/Fs and DL-PCBs), was 24.25 pg TEQ/g lipids if expressed in WHO1998-TEQ and 17.74 in WHO2005-TEQ.

The comparison of these results with those from a previous national study conducted in 1998 shows that proportion of PCDDs was 78% of PCDD/Fs in 2005 versus 50% in 1998. For the sum of the 6 NDL-PCBs, the geometric mean concentration in milk was 176.3 ng/g lipids. The mean fat concentration in breast milk was 25.1 g/L (range from 6 to 46.7 g/L). When the comparison concerns only the primiparous mothers in 1998 and 2007, the decrease of the mean of PCDD/F levels was equal to 40%.

Keywords: health; dioxin; environment;

P-0092

PREPARATION AND CHARACTERIZATION OF TI/Pt/PBO₂-TiO₂ ANODES FOR IBUPROFEN DEGRADATION**L. CIRIACO¹, C. ASCENCAO¹, M. J. PACHECO¹**¹ University of Beira Interior, Chemistry, Covilha, Portugal

Metal oxides are a promising class of anode materials that have been investigated in the last decades. Among the studied oxides, PbO₂ already proved to be very efficient in the degradation of organic pollutants, eliminating them from solution by mechanisms of conversion/combustion^[1]. It can even compete with BDD anodes, giving similar removal rates for organic pollutants degradation, with the advantage of having much lower preparation cost. However, it presents lower service-life than BDD anodes. Thus, to increase anodes life time, prior to PbO₂ depositions titanium substrates were platinized and, to allow photoelectrocatalysis applications, during the electrodeposition of PbO₂, TiO₂ nanoparticles were also incorporated in the film. Ti/Pt/β-PbO₂-TiO₂ electrodes were prepared by thermal electrochemical method^[2, 3]. The electrodes were structural and morphological characterised by XRD and SEM that confirm the presence of β-PbO₂+TiO₂ phases. The prepared Ti/Pt/β-PbO₂-TiO₂ anodes were used in the electrodegradation of 100 ppm ibuprofen aqueous solutions, with Na₂SO₄ 5 g L⁻¹ as electrolyte. The electrodegradation assays were run with 200 mL of solution and different currents densities, j, were tested, 10, 20 and 30 mA cm⁻², during 6 h. The samples collected during the electrochemical assays were analysed for the following parameters: Chemical oxygen demand (COD), total organic carbon (TOC) and UV-Visible absorption spectrophotometry. After 6 h assay, the best removals of Abs_{224nm}, COD and TOC were obtained at the highest current density tested and were, respectively, 95, 76 and 63%.

Acknowledgments: Fundacio para a Ciencia e a Tecnologia.

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Keywords: Ibuprofen; anodic oxidation; PbO₂;