

## **Determinants of bisphenol-A and triclosan in urine of Flemish adolescents**

**Tinne Geens, Hugo Neels, Adrian Covaci, *University of Antwerp, Belgium***

**Liesbeth Bruckers, *University of Hasselt, Belgium***

**Elly den Hond, Greet Schoeters, *Flemish Institute for technological research (VITO), Mol, Belgium***

Bisphenol A (BPA), one of the most discussed man-made chemicals, is widely used in the industrial production of polycarbonate and epoxy resins. BPA mimics estrogen and in vitro studies have shown that BPA can bind to the estrogen receptor and introduce estrogen receptor-mediated gene expression. Several animal studies have shown that BPA may act as a weak estrogenic compound causing breast cancer and onset of early puberty. Triclosan (TCS) is an antimicrobial substance widely used in personal care products (soaps, tooth paste, etc) in concentrations up to 0.3%. There is a lack of data on the human exposure to TCS. Furthermore, there is a need for human studies to investigate relationships between exposure levels and disorders such as for example chryptorchidism, early puberty, poor semen quality and testicular cancer.

The Flemish Environment and Health survey (FLEHS) have been carried out since 1999 and is part of a health-related environmental surveillance system in Flanders. Between 2007-2011, blood and urine were sampled from specific population groups and BPA and TCS were for the first time in Flanders measured in spot urine of adolescents (14-15y). The determination of total BPA and TCS was performed following a method published by Geens et al. (2009) employing GC-ECNI/MS. Median concentrations of total BPA and TCS were 2.22 and 1.30 ng/mL, respectively, with a 100% detection frequency for both compounds. BPA and TCS results in adolescents will be discussed and the importance of various factors (age, BMI, lifestyle, education of adolescent or family income) and the relationship with other contaminants (e.g. phthalates) will be briefly discussed.

With a simple model based on the measured concentrations (ng/mL) and literature reference values for the daily excreted urine volume ( $\text{mL}/\text{kg}_{\text{bw}}/\text{day}$ ), we roughly estimated that the daily intakes of BPA were two orders of magnitude lower than the current EFSA reference dose of  $50 \mu\text{g}/\text{kg}_{\text{bw}}/\text{day}$ .

For comparison, preliminary results of BPA and TCS levels in urine from an obese adult population will be presented. Concentrations of the obese population will also be compared with a lean control group. Sources important for human exposure to BPA and TCS will be inventoried.