Biomonitoring of adolescents – reference values for the exposure biomarkers

DPSIR

exposure biomarker	number	reference mean (95 % CI)	reference P90 (95 % CI)
total PCBs (ng/g fat)	1 645	68 (66-70)	116 (111-121)
p,p'-DDE (ng/g fat)	1 645	94 (89-99)	274 (242-306)
HCB (ng/g fat)	1 581	20.9 (20.4-21.3)	30.6 (29.3-31.9)
lead (µg/L)	1 659	21.7 (20.8-22.6)	46.7 (44.2-49.2)
cadmium (µg/L)	1 659	0.36 (0.33-0.38)	1.32 (1.23-1.40)
PAH marker (1-hydroxypyrene in ng/g creatinine)	1 598	88 (81-95)	484 (409-559)
benzene marker (t,t'-muconic acid in µg/g creatinine)	1 598	72 (69-79)	271 (241-300)

95 % CI: 95 % confidence interval, p,p'-DDE: metabolite of DDT, total PCBs: total of marker PCBs 138, 153 and 180.
All markers were corrected for age, gender and smoking. PCBs, p,p'-DDE and HCB were also corrected for Body Mass Index (BMI).

Source: Centre of expertise for Environment & Health (2006)

Biomonitoring and the Flemish Human Biomonitoring Programme

Within the framework of the Centre of expertise for Environment & Health, in 2001 and 2008 the Flemish Human Biomonitoring Programme (VHBP) was started. Via biomonitoring an attempt is being made to estimate the total exposure in humans. For this, the concentration of pollutants and their degradation products – exposure biomarkers – and/or early biological effects in humans – effect biomarkers – are measured. The reference mean and reference P90 are not targets or standards based on health risks, but can serve as a comparison for specific exposure situations (e.g. local environmental incident).
The reference mean indicates an average exposure, the reference P90 indicates the peak values.

In the first VHBP, polluting substances were investigated that are already known such as PCBs, dioxins and PAHs. In the second VHBP, in addition to these wellknown substances, an attempt was made to look at a number of new substances that are suspected of also being harmful at higher concentrations. Examples of these are flame retardants, bisphenol A and musks.

Reference values for young people

During the study of young people in the first VHBP the intention was to form a picture of the recent exposure to polluting substances in Flanders. The values for Flemish young people are average to moderately high compared to foreign countries. The reference mean and reference P90 still appear to be under the existing standards and target values.
But standards and/or target values are not available for all substances in the medium (urine, blood) in which the measurements were made.