



Antwerp, 20nd March 2021

Opinion on "Rapport d'Analyse – 210202-11 - Campagne de mesure des PCB dans les cheveux"

Please find here our comments/thoughts on the Analytical report related to PCBs in hair. We have discussed here below the following points.

1) Analysis method and quality control

PCB concentrations were measured in hair samples provided by participants, divided in two groups: 1) a case group (Châtelet), living nearby an industrial site where (metal and plastic) waste is handled; and 2) a control group (Nalignes), living approximately 10-15 km away.

The information on preparation and analysis of the samples is clear, including the complete description of the employed analytical method. The inclusion of the limits of quantification in the report is very informative. As such the analytical method is very robust, the employed quality assurance is sound. As such, the produced results are highly credible.

Detailed results are provided in the report and data are meticulously displayed and discussed. Figures and tables are generally of high quality.

Data analysis appears correctly executed and results are clearly presented and explained.

The interpretation of the data and the drawn conclusions of the report are good and correct.

2) Main lessons to be learned from this study

To demonstrate some hypotheses (e.g. relation between age and the sum of the PCB concentrations in the two groups), statistical testing has been performed to strengthen the relevance of the outcome. For this particular example, as age is an important driver of the PCB concentrations in all people (including an exposed group), differences between the exposed and control group were emphasized by dividing both groups in <40 y and >40 y (Figure 9 and 10). In this way, within each age class, the influence of the age co-variable is lower and therefore the differences seen between the exposed and control are mostly attributed to differences in exposure and not to age.

In conclusion, there is a significant difference of exposure between both groups (Châtelet and Nalignes) and this is not due to variation of PCBs with the age.

It is clear also from figure 8 in the report that the variability explained by age is larger for the control group. For the Châtelet group, there is more variation in the PCB concentrations, and not only due to age. This means that there are additional (external) exposure sources for these people, which might be investigated in future research in more elaborate way and by inclusion of other biological matrices, e.g. blood.

3) Potential chronic risks for the population living in Châtelet

It is precisely explained in the report that, although the detection frequency of the measured PCBs does not differ substantially between the Châtelet and Nalignes group, the concentrations of the measured PCBs (means, medians, maximal) are higher in the case group. The conclusions drawn are supported by the data of the study.



However, the analysis of PCBs in hair is solely indicative of exposure, and toxicological conclusions regarding the exposure degree and the risks associated with this exposure should be confirmed with blood analyses.

PCBs are persistent organic pollutants, which are chemical compounds with a very persistent character, bioaccumulative and toxic even in low concentrations. PCBs are considered as endocrine disruptors which can interfere with hormonal systems of living organisms and more precisely interfere with the production, regulation, transport and action of natural hormones in organisms. PCBs have also neurotoxic effects and are considered carcinogenic agents for humans.

Furthermore, it is likely that the population has been exposed to several other toxic compounds, not measured in this study. Such compounds, present in a mixture cocktail are possibly belonging to the classes of brominated flame retardants, perfluorinated chemicals, polycyclic aromatic hydrocarbons, phthalates or toxic metals. Such a mixture could potentially have a stronger effect in the human body than the mere sum of the separate groups of compounds.

Despite being unable to determine a proper risk analysis for the Châtelet group based on the hair analysis, it is evident that exposure to established harmful chemicals, including PCBs, measured in this study, should be reduced to the absolute minimum.

4) Suggested actions

We sincerely believe that public authorities should further work together with the industrial waste handler to optimize waste processing and thus minimize PCBs ending up in communities that live in the vicinity of the site and by extension for other waste sites.

One logical action would be to perform a larger biomonitoring study which should include the analysis of PCBs in blood, but also other toxic compounds which are potentially present in the Chatelet population. Such type of measurements executed in blood would allow to understand the risks associated with elevated exposures in the vicinity of waste processing sites.

Sincerely,

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