



A suitable human bio-monitoring programme to assess levels and trends of DecaBDE

An extensive programme to assess levels and trends of the flame retardant chemical DecaBDE in humans in Europe is being launched by The Institute for Risk Assessment Sciences, Utrecht University and the Netherlands Institute for Fisheries Research. The programme is called for by the European Union following the conclusion of a risk assessment of DecaBDE and is to be funded by the bromine industry organization, Bromine Science and Environmental Forum.

There is public debate about the presence of manmade chemicals in human blood and breast milk. And yet ever since man has exposed himself to fire, man has existed with manmade chemicals inside the human body.

Ongoing progress in analytical methodology enables us to detect ever smaller amounts of substances in the environment and also in the human body. Indeed, recent testing by environmental groups appears to demonstrate that if one looks for a manmade chemical in the human body there is a good chance of finding it. These one-off tests have helped raise awareness of the presence of hundreds of manmade chemicals in humans. However, such testing provides little in the way of understanding as to the significance of these findings in terms of human health. What is at issue is not the presence but the levels and trends of manmade chemicals in the human body.

The flame retardant chemical DecaBDE is one of hundreds of chemicals identified in blood and breast milk. So far all studies point to the levels of DecaBDE found as being several orders of magnitude below a level of risk to human health

This is reflected in the EU Risk Assessment Report on DecaBDE, which did not find any evidence of DecaBDE posing a risk to human health. However, European Competent Authorities have specified that its presence in the human body needs to be further assessed in a human biomonitoring study (covering milk and blood) with a time trend analysis so that the high margins of safety established by the EU risk assessment are maintained.

This assessment will be carried out by two separate projects:

- A 10-year bio-monitoring programme, funded by the bromine industry organization, Bromine Science and Environmental Forum, for monitoring DecaBDE levels in the blood of the European population. Within the first year, an initial pilot study will monitor blood levels in 4 different European countries – the Netherlands, Norway, the UK and Spain - to find out if there are regional differences in the levels found. Based on the data obtained in this pilot study, one country will be selected for further long-term monitoring of levels of DecaBDE over the full 10 year period.
- Furthermore it is understood that in the near future PBDEs, being persistent compounds in humans, will very likely be included in the regular international human

milk studies of the World Health Organization – International Program on Chemical Safety. In view of the continuing debate of the presence of DecaBDE in humans, these analysis will almost inevitably include this compound. The World Health Organization is already running this international monitoring study of breast milk for more than a decade and consequently has extensive experience and a participating global network.

These studies will enable EU authorities to monitor closely the levels of DecaBDE in the European population to an extent unparalleled anywhere else in the world. In turn, this will enable the EU authorities to react quickly should there be evidence of any levels approaching a potential risk to human health. The proposed monitoring study will enable a better comparison with toxicological relevant laboratory studies e.g. in the EU-FIRE project, thus leading to a more precise risk assessment.

In the 10-year human bio-monitoring programme the following research partners are involved:

- Institute for Risk Assessment Sciences, Utrecht, NL (Prof. Martin van den Berg, toxicologist and project leader; Prof. Bert Brunekreef, environmental epidemiologist)
- National Fisheries Institute, IJmuiden, NL (Prof. Jacob de Boer and Dr. Heather Lesley, environmental and analytical chemists)
- Norwegian Institute of Public Health (NIPH), Oslo, Norway. (Prof. Georg Becher, analytical chemist)

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