Enantioselective analysis of chiral organochlorines in plasma of delivering women from Arkhangelsk (Russia).

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High levels of organochlorines incl. polychlorinated biphenyls (PCB); 1,1,1-trichloro-2,2-bis-(4-chlorophenyl)-ethane (DDT) derivatives and other chlorinated pesticides has been found in human tissues throughout the Arctic with certain implication on health and well-being of human populations living in Arctic regions. Thus, the Arctic Monitoring and Assessment Programme (AMAP) initiated a circum-Arctic human health programme where also priority contaminants such as persistent organic pollutants (POPs) are monitored continuously. In this context, a study on the occurrence of POPs in 27 plasma samples of delivering women from the city of Arkhangelsk (Russia) was performed recently. As previously observed in human plasma samples from Nickel (Russia), high levels for β-HCHs and *p,p'*-DDT were determined in these samples. The generally high levels of *p,p'*-DDT indicate fresh sources presumably technical DDT-mixture. Technical DDT is a mixture of mainly three isomers, *o,p'*-, *p,p'*- and *o,o'*-DDT. Whereas *p,p'*-DDT makes up to 66% of the total DDT mixture, *o,p'*-DDT contribute with about 15%. In order to elucidate the suspicion of fresh DDT source causing elevated DDT levels in the plasma samples, enantioselective trace analysis on modified β-cyclodextrin capillary columns with GC/ECD was performed. In the technical mixture, only *o,p'*-DDT is a chiral molecule and, thus, can be separated into enantiomers on enantioselective chromatographic columns. A 1:1 mixture of the enantiomers (racemic mixture) in the plasma is an indication for uptake of undegraded technical DDT whereas a deviation from the racemic distribution points towards DDT sources which went through enzymatic degradation prior to uptake into the human organism.

In all samples nearly racemic distribution for *o,p'*-DDT was found, supporting the theory that fresh and undegraded DDT sources are the main contribution to the elevated DDT values found in the plasma samples. In addition to *o,p'*-DDT, the enantiomer distribution of α-HCH, *trans*-chlordane and chlorobornane "Parlar #50" was studied in the plasma samples.