

## Abstract

# Target Analysis and Suspect Screening of Per- and Polyfluoroalkyl Substances in Maternal–Newborn Paired Samples near Fluorochemical Facilities <sup>†</sup>

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**Keywords:** per- and perfluoroalkyl substances (PFASs); PFASs congeners; target analysis; suspect screening; placental transfer; health risk

1. Introduction: Fuxin Fluorochemical Industrial Park is one of the main concentrated fluorochemical facilities in northeastern China. Our previous studies revealed that perfluorooctanoic acid (PFOA) and perfluorobutane sulfonate (PFBS) were the dominant PFAS contaminants determined in environmental samples around local fluorochemical facilities, and the levels of those two PFASs generally showed an increasing temporal trend over time.

2. Method: In this study, 50 paired samples of maternal and cord serum as well as placenta were derived from Fuxin pregnant women. Twenty-one legacy PFASs were analyzed in all the samples via high-performance liquid chromatography–tandem mass spectrometry (HPLC–MS/MS), and novel PFASs in all the samples were beneficial for the method of suspect screening.

3. Results: A total of 11 categories (49 species) of novel PFASs were identified in all samples, of which 4 categories (20 species) were discovered in human serum and placenta for the first time, accounting for 90% of maternal serum and 96% of placenta and umbilical cord serum. Legacy PFASs had median values of 1.2, 1.3, and 1.6 for mother–placenta transfer (Rm/p), placenta–newborn transfer (Rp/n), and mother–newborn transfer (Rm/n), respectively. Rm/p, Rp/n, and Rm/n for each novel PFAS were also able to be derived, with median values of 0.9, 1.2, and 0.8, respectively.

4. Conclusions: In summary, of the 11 classes (49 species) of novel PFASs detected, 4 classes (20 species) had never been reported previously in human blood and placenta samples. Different from legacy PFCAs and PFSAs, most of the novel PFASs observed in placentas and cord sera had higher levels than those in maternal sera.

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