



Community Brief: East Metro PFC Biomonitoring Study Follow-Up Analysis of PFC Levels in Blood and Past Levels of PFCs in Drinking Water April 2010

Background

In 2009 the Minnesota Department of Health (MDH) conducted a biomonitoring study to measure seven types of perfluorochemicals (PFCs) in the blood of a random sample of 196 people from two communities in the east metro area. The study found that all 196 people had PFOA, PFOS, and PFHxS in their blood. PFBA was found in the blood of 55 people (28%), and PFBS was found in the blood of 5 people (3%). PFPeA and PFHxA were not found in the blood of any of the participants. The average blood levels for PFOA, PFOS, and PFHxS were found to be higher in the east metro communities than they are in the general United States population.

This community brief summarizes a follow-up analysis using the original biomonitoring data. The new analysis looked at the relationship between the levels of PFCs found in the blood of people in the study and the levels of PFCs that were found in the drinking water in the past. The follow-up analysis included only the 98 people for whom the levels of PFOA and PFOS in their private wells were known.

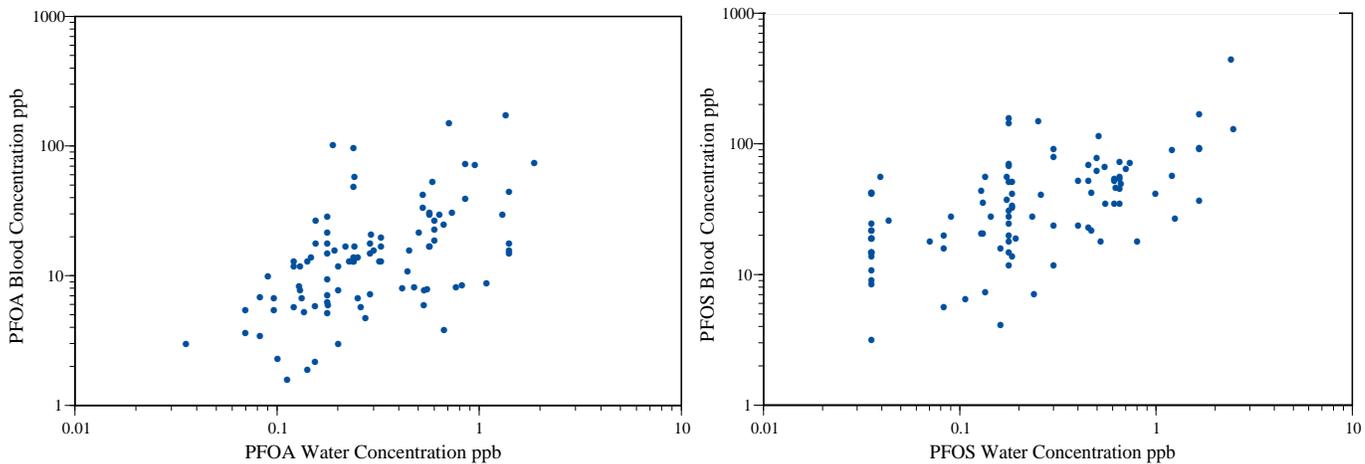
Methods

The analysis looked at how strongly PFC levels in the blood are correlated with the levels of PFCs that were found in the drinking water. Two types of PFCs were included in the analysis: PFOA and PFOS.

For each person, the level of PFCs in the water was estimated by taking an average of the amount of PFOS and PFOA measured in well samples from 2005 through 2008. The analysis also took into account how old someone was, how long they had lived in the community, and whether they were male or female.

Results

The relationship between the levels of PFOA and PFOS found in drinking water and blood for 98 people are shown in Figures 1 and 2. Each point on these graphs shows the PFC level in water and the PFC level in blood for a single person. These graphs show that higher PFC levels in water were partly correlated with higher levels in the blood. For PFOA, age and water concentration together accounted for approximately 43% of the differences in PFOA levels found in blood. For PFOS, age, gender, and water concentration together accounted for approximately 44% of the differences in PFOS levels found in blood.



Discussion and Limitations

Although the results show a correlation between past levels of PFCs in drinking water and levels of PFCs measured in people's blood, the water only partly accounts for differences in people's PFC blood levels. This may be because people are exposed to PFCs through many other sources, such as consumer products (non-stick and stain-resistant products and coatings) and diet, which were not measured in this study.

Other studies have shown that over time levels of PFCs in people's blood have been going down. This is likely because steps have been taken to reduce or stop the use of certain PFCs since 2000. The correlation seen between levels of PFCs in drinking water and in blood suggests that the removal of PFCs from the drinking water to safe levels will lead to a decline in PFOA and PFOS blood levels in the community over time.

For More Information

If you would like to learn more about PFCs or the East Metro PFC Biomonitoring Pilot Project, please visit: <http://www.health.state.mn.us/divs/eh/hazardous/topics/pfcs/index.html> .

The East Metro PFC Biomonitoring Pilot Project was funded by the Minnesota State Legislature as part of the Environmental Health Tracking and Biomonitoring Program at the Minnesota Department of Health. For questions or comments please call the tracking program at: 651-201-5900.