

PFOA Blood Testing and Exposure Assessment • Summary of Results *Jan. 25, 2017*

The Health Department conducted a PFOA blood testing and exposure assessment with three goals in mind:

1. to better understand how people in the Bennington/North Bennington community were exposed to PFOA
2. to make sure that appropriate actions had been taken to prevent continued exposure
3. to provide community members with their PFOA blood level and how it compares to background levels in the U.S. population

The overall results of our study indicate that drinking water from contaminated wells was the main source of exposure to PFOA.

Had we not found that concentrations of PFOA in blood were associated with PFOA concentrations in drinking water, we would have been concerned that there was potentially another undetected and unaddressed exposure pathway.

Private Well Water Consumption – Results of blood testing showed that PFOA levels in blood were strongly correlated with PFOA levels in well water. The higher the concentration of PFOA in a person's drinking water, the higher the level of PFOA in their blood. Adding further support to this finding, when the amount an individual drank and how long they drank it for was considered, the association with PFOA in blood remained strong. In other words, the more contaminated water an individual drank and the longer they drank it for, the higher the level of PFOA in blood.

Fruit and Vegetable Consumption – Preliminary results showed an association between people who frequently ate fruits and vegetables grown within the sampling area and PFOA in blood. However, this association was not present among those who consumed low levels of PFOA in water. In other words, consuming contaminated drinking water likely was responsible for the original association.

Men Compared to Women – Study results showed higher PFOA blood levels in men compared to women. These data are consistent with other studies, including PFOA biomonitoring in Minnesota and New York. The difference between women and men could be due to sex-specific differences, different occupational histories, consumer product use, or PFOA clearance rates – the time it takes for PFOA to leave the body. Studies have shown that PFOA can leave women's bodies through menstruation, childbirth and breastfeeding.

Occupational Exposure – As expected, individuals who worked directly with PFOA had statistically higher PFOA levels (geometric mean: 59 µg/L) in their blood compared to those who did not work with PFOA (geometric mean: 9.6 µg/L). Average PFOA blood levels in other populations that worked with PFOA were higher than in the Bennington/North Bennington community.

For example, the average level in a study of workers in Decatur, Alabama had an average level of PFOA in blood of 1130 µg/L. Levels were likely lower among the Bennington/North Bennington worker group, in part because most of these workers stopped working with PFOA in 2002 or earlier.

Health Outcomes – Statistically significant associations were seen between PFOA blood levels and high cholesterol and being treated for high blood pressure. Among women who reported having children, an association was seen between PFOA levels in blood and high blood pressure during pregnancy.

Statistical Limitations – We did not see statistical associations with other health outcomes that have been previously shown in the literature and which we asked about on the questionnaire. In general, the other health outcomes are less common. With less common outcomes, many more participants are needed in a study to detect whether there is a statistically significant association.

To determine what health outcomes are associated with environmental hazards, the Health Department often looks to studies of larger populations. Examples of this are the studies conducted in the mid-Ohio valley, which had enough statistical power to detect changes in occurrence of less common health outcomes. The fact that no association was detected in some health outcomes in the study of the Bennington/North Bennington community does not rule out the possibility that an association exists.

Analyses of health outcomes were not completed when there were five or fewer people with a specific disease. This was true for kidney cancer and testicular cancer. The Health Department does not publish information on five or fewer cases. This is both to protect confidential health information, and to avoid drawing conclusions on potentially unstable rates based on small numbers.

Conclusion and Recommendations

The results of this study confirm that drinking water was the primary source of exposure to PFOA among non-occupationally exposed individuals in the community.

1. The Health Department continues to recommend that water with PFOA above 20 parts per trillion NOT be used for drinking, preparing food, cooking, brushing teeth, watering gardens or any other manner of ingestion.
2. The Health Department continues to update health care providers in the area, and recommends that anyone who has concerns about their health related to their blood test results should consult with their health care provider.