



Environmental Health Information

PFBA in Groundwater in the South East Metro Area

January 2007

What is PFBA?

PFBA stands for perfluorobutanoic acid. It is one of a family of chemicals known as perfluorochemicals, or PFCs. PFCs are made by 3M in Cottage Grove and several other companies around the world for use in household and industrial products such as: stain repellents, lubricants, fire retardants and suppressants, pesticides, surfactants, and emulsifiers. PFBA was made by the 3M Company at its Cottage Grove facility, reportedly for use in film coatings. PFBA may also be a breakdown product of other PFCs.

How did we learn PFBA was in the groundwater?

Learning about chemical contamination in groundwater is a step by step process. Though the discovery of PFCs in groundwater in Washington County is relatively new, testing information from the last couple of years suggests that the levels of PFCs in the groundwater are stable and not increasing. The testing information also suggests that PFCs have been present for some time. Our testing for these chemicals has improved since we began.

3M disposed of PFC wastes at three sites in Washington County: the former Washington County Sanitary Landfill, the former Abresch dump in Oakdale and another disposal site on the border of Woodbury and Cottage Grove.

In 2004, MDH staff began collecting samples from private wells in the City of Lake Elmo to look for two PFCs, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). Low levels of PFOA were found in a few private wells near the former Washington County Landfill. More testing in 2005 revealed PFOS and PFOA in a larger group of private wells in Lake Elmo and several city wells in Oakdale. Tests in several other nearby municipal water supplies, including Cottage Grove, Woodbury, and Hastings did not find PFOA or PFOS.

In spring 2006, the MDH Public Health Laboratory developed methods to look for five more PFCs. Analysis of the water samples revealed that one of these, PFBA, is widespread. PFBA seems to move very freely in the groundwater; more so than PFOS or PFOA. It does not break down or degrade. PFBA is found in two distinct areas.



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One area of groundwater contamination appears to originate from the former Washington County Landfill in Lake Elmo and the former Abresch Dump in Oakdale. This area extends into the City of Woodbury. In drinking water near the disposal sites, multiple PFCs, including PFOA and PFOS, are found. Only PFBA has been detected in the Woodbury municipal wells.

A second area of groundwater contamination is located further south and is primarily PFBA, with no detections of PFOA or PFOS. Confirming the test results of 2005, no PFOA or PFOS have been detected in these areas, but PFBA has been detected in all of the city wells in Cottage Grove, St. Paul Park and Newport, and some of the city wells in South St. Paul and Hastings. This area of contamination may originate from the disposal site on the border of Woodbury and Cottage Grove. Investigations are underway to determine if this site is the source of the contamination.

How does MDH decide if there are unsafe levels of PFCs in the drinking water?

A Health Based Value (HBV) is the amount of a chemical in drinking water considered by MDH to be safe for people to drink daily for up to a lifetime. In 2002 MDH developed HBVs for PFOA and PFOS because PFCs were disposed of in dumps and landfills in Minnesota and had been found in groundwater. HBVs are advisory values and are used by state health and environmental programs as one tool for deciding what actions should be taken.

Since 2002, new toxicological studies on PFCs have become available. MDH is in the process of re-evaluating the 2002 HBVs in light of this new information. As a cautious public health approach until the review is completed, MDH has been using the following well advisory guidelines:

PFOS: 0.6 ppb

PFOA: 1 ppb

Again, as a cautious public health approach, MDH is using the well advisory guideline for PFOA of 1 ppb to evaluate all the PFC carboxylic acids, including PFBA. Similarly, the well advisory guideline of 0.6 ppb for PFOS is being used to evaluate all PFC sulfonic acids. These guidelines are used to determine MDH drinking water advice.

When MDH looks at a chemical in water, it also considers if the chemical could evaporate out of the water when people wash clothes or shower and be breathed in, or if the chemical could be absorbed through people's skin. The chemistry of PFBA suggests that it does not easily evaporate from water. At this time, the exposure of most concern is through drinking water and not breathing it in or absorbing it through the skin.

The US EPA and 3M are currently doing more studies on PFBA. We anticipate that PFBA should be less toxic to people than PFOA based on its chemical characteristics and on preliminary data from animal studies. Unlike PFOA and PFOS, PFBA does not appear to accumulate in animals or people. Once the studies are completed and reviewed, MDH will revise our advice for PFBA, as well as PFOS and PFOA.

What is being done to monitor the situation?

MDH will continue to monitor the PFBA levels in public and private wells in the southeast metropolitan area and will report the results to citizens, local communities, local governments, county governments and the MPCA so that people's health will continue to be protected.

How can I reduce my exposure to PFBA?

Based on the available information, there is no immediate concern for drinking water. If PFBA has been detected in your drinking water and you wish to reduce your exposure, there are some simple steps you can take. You could use bottled water for part or all of your drinking or cooking needs. However, widespread testing of bottled water for PFCs has not been done.

Filters containing granular activated carbon (GAC) remove PFCs, including PFBA. Many common water filters contain GAC. Be sure that any GAC filter system is properly installed and maintained. Because GAC is not as effective at removing and retaining PFBA for as long as other PFCs, special care should be taken to change the carbon in the GAC at recommended intervals.

It is unlikely that other types of common water treatment systems, such as water softeners, would remove PFBA. Boiling the water will not remove PFBA or other PFCs.

Beware of "fly by night" water treatment sellers. If you are interested in installing a water treatment system of any sort, be sure to work with a reputable supplier.

For more information contact:

MDH/Site Assessment and Consultation: (651) 201-4897 or 1 (800) 657-3908, press "4" and leave a message.

To request this document in another format, call (651) 201-5000, TDD: (651) 201-5797 or, the Minnesota Relay Service at 1 (800) 627-3529.

This information sheet was prepared in cooperation with the federal Agency for Toxic Substances and Disease Registry.



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