

MPCA criteria for Baytown Superfund Site TCE sampling and GAC management

August 14, 2015

These criteria are developed for the Minnesota Department of Health's Health Based Value (HBV) of 0.4 µg/L trichloroethylene (TCE). This HBV was released in May 2013. For granular activated carbon (GAC) filter sampling and change-outs, this document updates the June 27, 2012 Program Review Update by MPCA.

1.0 Baytown Long-term Sampling Schedule (MPCA Program Only)

<u>Previous TCE Result</u>	<u>Sampling Frequency</u>
• 0.3 - 0.4 µg/L	Sample every 4 months.
• 0.2 - 0.29 µg/L	Sample semiannually.
• 0.1 - 0.19 µg/L	Sample annually.
• 0.04 - 0.099 µg/L (J values)	Sample every 2 years.
• <0.1 µg/L within the plume	Sample every 2 years.
• <0.1 µg/L with immediately antecedent result >0.09 µg/L	Sample every 2 years.
• self-installed GACs <0.41 µg/L	Sample every 2 years.
• Perimeter wells outside the plume and selected Tunnel City wells	Sample every 3 years.
• If there is no GAC filter and the well exceeds 0.4 µg/L, then the next sample is as soon as possible and within 8 weeks of the exceedance.	
• If a GAC filter was self-installed at or below 0.4 µg/L and the well exceeds 0.4 µg/L, then the next sample is within 4 months of the first exceedance and may include a treated-mid sample between the GAC tanks.	
• A residential well sampled under the MPCA program based on date of property approval that has two consecutive TCE sampling results above 0.4 µg/L qualifies for a well advisory and the MPCA GAC management program. The confirmed exceedance automatically removes this well from the routine sampling schedule listed above.	

2.0 MPCA GAC Sampling and Change-outs

Unless otherwise noted, part 2 refers to the MPCA program for sampling and management of GAC filters that qualify based on properties platted and approved before April 9, 2002. Table 1 shows the frequency of change-outs for each class of GAC filters based on TCE concentration. These GAC filters consist of two 90-pound canisters.

Table 1 - GAC Filter Classes for Change-out and Sample Scheduling

Class	Before GAC TCE (µg/L)	Change-out Frequency
Class A	0.1 – 5.0	6 years
Class AN	2.1 — 5.0	5.5 years (installed >5.0 months late)*
Class B	5.1— 10.0	5 years
Class C	10.1 – 20.0	4 years
Class XC	10.1- 17.0 µg/L and <300 gpd	5 years
Class D	20.1—25	3.5 years
Class X	>25 µg/L; >420 gpd; very low flow; 30-lb tanks; other	2 - 6 years

*Class AN may also be a self-installed GAC with change-out >5.0 months after sampling and insufficient flow record; or a late change-out of >5.0 months after sampling for a previous Class A with a new owner.

Sampling is two months before the change-out schedule shown in Table 1. Next change-out dates are routinely figured from the previous change-out date.

If change-out occurs more than 5.0 months after sampling and it is a Class C, XC, D, or X, then the next change-out date is adjusted to be sooner than the Table 1 frequency. If the flow is high enough to warrant it (<300 gpd means change-out based strictly on Table 1 frequency is possible up to a 14-month delay between sampling and change-out). If it is initially a Class A GAC with a new resident and a change-out later than 5.0 months after sampling, then it should be reclassified as Class AN (must be >2.0 µg/L TCE).

If treated-mid sample result is >1 µg/L, then both GAC canisters need to be replaced immediately. If the treated-mid sample is 0.1 – 1.0 µg/L, a standard change-out should be ordered immediately for residential GACs.

Table 2 – Volume-based GAC Filter Change-out Criteria

Class	TCE Concentration	Maximum Volume (gallons)
Class A (Class AN)	0.1 - 5.0 µg/L	<1,000,000
Class B	5.1 - 10 µg/L	< 800,000
Class C	10.1 - 20 µg/L	< 613,000
Class D	20.1 - 25 µg/L	< 550,000
Class X	>25 µg/L or >420 gpd	>volume limit for class
Class XC	10.1 - 17.0 µg/L, <300 gpd	<550,000

2.1 Other Considerations for Sampling and GAC Change-outs.

6.0 years is the maximum limit for change-out frequency for all GAC filters. This is to reduce the risk of biofouling. Class B change-out frequency is set at 5 years (1) to accommodate late change-outs, (2) to reduce the number of Class X GAC filters, (3) to eliminate the need to send meter cards, (4) to reduce the risk of biofouling, and (5) to obtain more frequent plume tracking data.

If carbon tetrachloride or perchloroethene (PCE) is detected, sampling frequency may increase. If either is detected in the well, then the GAC class may need to be upgraded.

GACs on barns and airport hangars are Class X.

2.2 Sampling of Self-installed GAC Filters

2.2.1 Concentration Decrease for Self-Installation Before Well Advisory

If the concentration drops below or to the HBV of 0.4 µg/L at the time of the second Before GAC sample for a self-installed GAC, then the next sample is two years later unless the system is a nonconforming brand. Then an earlier sample would be needed.

2.2.2 Properties Approved after April 2002

Owner-installed GACs for properties platted and approved after April 2002 are not sampled by MPCA. A "before-GAC-only" sample is sometimes sampled by MPCA for plume tracking purposes at these properties.

3.0 Remedies for Nonresidential Wells

Nonresidential wells, such as public water supplies, shop wells, office wells, commercial wells, industrial wells, transient-use wells, and farm wells, are evaluated for a GAC or other remedy on a case-by-case basis.

4.0 Previous GAC Management Program Reviews

Response Action Implementation Plan by Wenck for MAC (2001)

January 27, 2010 by Bay West (new flow-volume-based criteria for GAC change outs)

June 27, 2012 by MPCA (when to do early change out)

May 23, 2013 by MPCA, email (new sampling schedule for TCE HBV of 0.4 µg/L)

Nov 22, 2013 by MPCA email (institutes Class AN and eliminates Class N)

April 7, 2014 email to Michele Mabry and Dan Musser of Bay West (new annual sampling frequency for 0.1 - 0.19 µg/L wells)

5.0 Terms

before GAC – Untreated sample from a well that has granular activated carbon treatment on its water supply.

change-out - A standard change-out removes the GAC canister closest to the well and replaces it with the one second in line; a new canister is added to the former position of the one second in line.

gpd – gallons per day

HBV - Health Based Value is the Minnesota Department of Health drinking water limit that is not in a rule.

J values - These are detections below the reporting limit that are estimated concentrations.

TCE - 1,1,2-trichloroethene

treated-mid - A sample collected between two GAC canisters to test performance of the filter.

µg/L – micrograms per liter or parts per billion