



**Recommendations and Questions to the U.S. Army and the Wisconsin DNR
Concerning Groundwater Quality at and near the former Badger Army Ammunition Plant**

Public Informational Meeting, Sauk City, WI

July 26, 2017

Deterrent Burning Grounds (DBG) and Existing Landfill (NE Corner of Badger)

Background: The Army reports that concentrations of the explosive Dinitrotoluene (DNT) in groundwater have decreased over the past year in this area except in two monitoring wells, ELN-1502A and DBM-8202. In April 2017, total DNT concentrations in this well were detected at 0.442 micrograms per liter ($\mu\text{g/l}$) which is 8 times the groundwater standard of 0.05 $\mu\text{g/l}$. In April 2017, total DNT was detected in DBM-8202 at 8.58 $\mu\text{g/l}$ which is 170 times the safe standard.

We recommend that the WDNR require the Army to answer and substantiate the following for the Department's review and consideration:

- (1) Is the remedy stopping DNT and other contaminants from migrating to groundwater? (Why are we still seeing high concentrations in groundwater at the source area?) The upcoming required 5-year review of the remedy at the DBG affords an opportunity to conduct this evaluation.
- (2) What is the remaining contaminant mass of DNT (all isomers) in subsurface soils? This analysis has still not been completed as required in the 2012 WDNR approval.
- (3) Looking forward, what is the worst case scenario for groundwater quality downgradient from the DBG/Existing Landfill?
- (4) Are sulfates co-located with other contaminants in groundwater at and near Badger? In other words, is there only one groundwater contaminant plume at the NE corner of Badger?

Drinking Water Wells

We recommend that the WDNR clarify why drinking water well testing has been reduced over the years. Certain sources have mistakenly reported that decisions to reduce private well testing in recent years have hinged on the anticipated municipal water system.

We recommend that the WDNR clarify that a municipal system does not relieve the Army of its responsibility to restore groundwater quality, and is documented in the 2012 WDNR groundwater remedy approval.

We recommend the reinstatement of private well testing for homes that are located within or very near groundwater contaminant plume margins such as homes along County Z.

We recommend that private wells with detections of chlorinated solvents, such as 1,1,1-trichloroethane, be periodically tested for 1,4-dioxane, a solvent stabilizer that is a likely human carcinogen (EPA). The NR140 groundwater standard for 1,4-Dioxane is only 3 $\mu\text{g/l}$ which is considerably lower than the standard for solvents found at Badger such as 1,1,1-TCA (200 $\mu\text{g/l}$). Moreover, the fate and transport of 1,4-dioxane in the environment may differ significantly from associated solvents.

We recommend testing for perfluorinated chemicals (PFCs) at the former fire training area and other potential source areas at Badger. While there has been informal discussion between the WDNR and Army about this concern in the past, there is now a significant body of evidence that these emerging contaminants of concern are persistent, bioaccumulative, and toxic. Moreover, PFCs are not removed by conventional water treatment methods, such as in-situ pump and treat, soil vapor extraction and air sparging (EPA).

Public Outreach

Recommend: Explaining and presenting the next steps in cleanup, estimated timeline, and opportunities for public input. Another public meeting should be held within 3 months.

Gruber's Grove Bay on Lake Wisconsin

For more than 75 years, mercury contamination from Badger Army Ammunition Plant has poisoned fish and aquatic life in Lake Wisconsin, placing public health at risk. Safe removal of contaminated sediments is necessary to protect human health from ongoing exposures.

The primary public health concern associated with mercury in Gruber's Grove Bay is contamination of fish tissue, according to the Wisconsin DNR. Mercury accumulates in fish tissue as methylmercury. This form of mercury presents the greatest risk to human health through consumption of contaminated fish. Mercury is a highly toxic element and there is no known safe level of exposure. Ideally, neither children nor adults should have any mercury in their bodies.

Therefore, we recommend that WDNR set a date-certain for a corrective action to remove contaminated sediments from Gruber's Grove Bay, particularly with the dwindling Army presence at Badger.

Ethyl Ether (*southern boundary of Badger*)

We recommend that the WDNR require the Army to document, for the Department's review and consideration:

- (1) the vertical and horizontal delineation of the ethyl ether groundwater contaminant plume,
- (2) the location and delineation of the source area, including contaminant mass, and
- (3) possible active remedies that will protect groundwater from further contamination and achieve compliance with groundwater standards in a reasonable time frame (3-5 years).

Degradation Products of DNT

We appreciate the Department's prompt follow-up to require testing in response to the new Health Advisory Levels (HALs) for degradation products of the explosive compound DNT, developed in response to a formal petition by CSWAB.

Municipal Water System

CSWAB does not have a position and is not weighing in on the proposed municipal water system as we believe this decision should be made by affected residents who will ultimately be responsible for this system. Large landholders, particularly those who will not be utilizing municipal water, should not influence this decision-making process.

The WDNR affirmed in its 2012 decision document that a municipal water system is not a remedy for groundwater contamination. Even if built, the municipal water system does not relieve the Army of its responsibility to restore groundwater quality and meet enforceable groundwater standards in a reasonable timeframe. CSWAB's role is to assure that the Army fulfills this responsibility and that affected communities are empowered and engaged in the decision-making process.

Citizens for Safe Water Around Badger – CSWAB.org

E12629 Weigand's Bay South - Merrimac, WI 53561

Telephone (608) 643-3124

Email: info@cswab.org

Website: www.cswab.org

www.facebook.com/cswab.org

www.twitter.com/cswab