

DISTRICT HEALTH DEPARTMENT NO. 2
ENVIRONMENTAL HEALTH DIVISION
INTERNAL GUIDANCE

To: Registered Well Drillers and Pump Installers Residing Within
District Health Department No. 2 (Alcona, Iosco, Ogemaw and Oscoda Counties)

From: Douglas W. Getty, Environmental Health Director
District Health Department #2 (DHD2)

Subject: Use of Neat Cement Grout in Areas of Elevated Chlorides

Date: March 1, 2011

Background

District Health Department No. 2 (DHD2) would like to review environmental conditions that may pose a risk of ground water contamination due to the failure of bentonite grout used to seal the annular space between the well casing and the borehole. Documentation and field experience has demonstrated that elevated levels of chlorides may result in the breakdown of hydrated bentonite products. Additionally at least one bentonite grout manufacturing company has advised that bentonite grout materials may be degraded under conditions discussed in this memorandum.

Part 127, Act 368, PA 1978, as amended, notes in R 325.1621 (3) (a), (Rule 121(3)(a)) that “A well shall be constructed to maintain existing natural protection against the contamination of aquifers.”

The Environmental Health Regulations for DHD2 notes in Sections 5.15 and 5.16, respectively, that the Health Officer may:

- a. impose conditions proven necessary to protect the public health or ground water quality, and
- b. require that a well meet specific construction requirements...if... at risk of becoming contaminated from a known source...or...a pathway for contaminants to enter a deeper aquifer.

Internal Guidance

Well Drilling in Area of Elevated Chlorides

Therefore, in order to provide uniform administration of water well drilling regulations and to adequately protect the natural environment, DHD2 is notifying all well drilling contractors within its jurisdiction that:

Well construction utilizing an oversized borehole in areas with known elevated levels of chlorides must utilize neat cement grout to grout the annular space.

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Well drilling firms that **wish to use a bentonite grout in these areas must obtain specific approval** by DHD2 on a case by case basis; and should expect to provide documentation that chloride levels are not elevated.

This notice does not pertain to wells drilled using cable tool, hollow rod, or similar well drilling methods and using acceptable dry granular methods of grouting.

For the purposes of this memorandum “elevated” means:

- a. **chlorides** levels expected, or documented, to be **higher than 1500 mg/l** (ppm)

Elevated levels would need to be present for at least a season, e.g. spring, to be applicable in the memorandum.

Locations of Possible Elevated Chlorides within DHD2

DHD2 has identified the areas listed below as areas of elevated levels of chlorides. There may be other areas not included in this memorandum and in those cases when elevated levels of chlorides are known to the well drilling firms, the firm is expected to notify DHD2 of such prior to well construction and construct the well using neat cement grout.

1. **Iosco County** south of M-55
When drilling through shale/gypsum layers to deeper aquifers, typically sandstone, high levels of chlorides thought to be naturally occurring are typically encountered in the rock formations overlying the sandstone aquifer.
2. **Ogemaw County** south of M-55 between Cook Road and Sage Lake Road.
High chlorides levels may be encountered in drift formations due to leakage from old oil and gas well construction occurring in previous decades. Bedrock wells may also produce elevated levels of chlorides in rock formations overlying the sandstone aquifer.
3. **Alcona County** along the Lake Huron shoreline
Elevated chlorides levels may be found in aquifers below the clay which holds up the surface water aquifer.

Previous Guidance

This matter has been previously discussed by the Water Supply Advisory Committee (WSAC) for DHD2 and in a document sent to all area well drillers by DHD2 on the subject of “Areas of Concern for Water Well Drilling” dated May 24, 1999. This document discussed well drilling in Alabaster Township in Iosco County due to high levels of chlorides in shale /gypsum formations above the sandstone aquifers. This document noted that the solution to the high chloride problem was to install the large diameter casing (as opposed to using liner pipe) all the way to the sandstone with neat cement grout the entire length of the casing.

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This matter was also discussed by MDEQ staff at the DHD2's Water Supply Advisory Committee meetings on March 11, 2009 and March 8, 2010.

Wells utilizing bentonite grout in areas of elevated chlorides may be required to correct a construction deficiency where water wells have not been grouted in a manner that would maintain existing natural protection of water bearing formations. Well drilling firms are encouraged to contact DHD2 staff to discuss areas of concern with respect to the use of bentonite grout as discussed herein.

Please contact me at 989-343-1803, or DHD2 staff in your county, with any questions or comments. Thank you.

Cc: Ms Lynnette Benjamin, Health Officer, DHD2
Mr. Robert Webb, II, Chairman, WSAC, DHD2
Mr. Joe Crigier, MDNRE

March 1, 2011

Reviewed and approved by WSAC