

BART testing wells subjected to chlorine treatments

Quick Break Training

13 March 2009

Chlorine treatments in water commonly use different strengths of bleach as standard treatments for water wells suffering some form of production loss or quality control problems. These symptoms of failure could at least be partly caused by the forms that the biomass takes around the water well. Natural growths and activities of bacteria in, and around the water wells can cause plugging, corrosion, discolored water, smells and even affect the amount of water that can be pumped from a well. Within the well the microbes are commonly dominated by different groups of bacteria and chlorine has been found to affect these bacterial growths and activities and often reduce symptoms. Of the chlorine products it is sodium hypochlorite that is most commonly used as a 5.5% solution which is readily available as domestic bleach. This product is a very economical way to apply shock chlorination to water wells. Symptoms that commonly cause problems for the well users include losing flows from the well, offensive odors (such as rotten eggs), dirty or discolored water, and frequent equipment failures due to corrosion or plugging. BART testers can be used to identify some of the bacteria that are the principal cause of these failures. All testers contain chemical neutralizers that would prevent the chlorine from interfering with the reactions.

Go to the web site (www.dbi.ca) for more information as to which BART testers would be the most appropriate for identifying the types of problems encountered in the well. If the BART testers do show reactions before treating with chlorine then successful treatment could be confirmed by repeating the BART tests and finding either much longer time lapses (smaller active populations) and/or shifts in the reaction patterns. BART testers showing reactions can determine the types of active bacteria and these reactions can be used to crudely determine whether a chlorine treatment has impacted on these active bacterial growths. Remember that it is recommended that safety goggles be worn and that the hands be protected by wearing latex or rubber gloves when handling chlorine. Even when setting up BART testers on chlorinated samples then could be a significant reaction between the chlorine bleach and the contents of the BART tester. While this is not likely it is recommended to err on the side of caution.

If the chlorine is effective then changes may be seen in lengthening time lapses and changes in the form of reactions seen in the tester. Common effects of chlorine are that the colors are lighter, growths to break apart more readily, and some level of clarity returns to the water in the tester. Failure in the development of these responses to the chlorine (it looks the same after six hours as it did before adding the chlorine!) means that the bleach did not have any obvious effect. It should be noted that chlorine (at concentrations of up to 5,000ppm may be neutralized by the chemicals in the BART tester. Furthermore remember that the BART tester may contain active microorganisms and disposal should follow the standard recommended procedures as described on the Certificate of Analysis that can be found in all BART boxes.