

## **Water Use and Water Quality Issues**

### **Bryan Swistock Webinar Presentation February 19, 2009**

#### **Questions that were asked and not answered during Bryan Swistock webinar presentation.**

1. Can you look into solar evaporation units for the salty water?

Given the large quantities of waste fluids generated, solar powered evaporation units are unlikely to be a viable solution for treatment and disposal.

(WASTEWATER RELATED)

2. Do homeowners whose homes are further than 1000 feet from the drilling site have a leg to stand on in a lawsuit against the gas companies if their wells become contaminated?

Homeowners outside the 1,000 foot distance can file a complaint with DEP if they feel their well water has been contaminated. In this case, it would be important for the homeowner to have arranged for a pre-drilling water test so any impacts could be documented by comparing post-drilling test results to pre-drilling test results.

3. Are there state standard distance requirements for distance from public works such as dams, bridges and navigation facilities?

Sec. 601.205 of the Oil and Gas Act includes setback distances to buildings, water wells, streams, springs, bodies of water and wetlands. In the process of granting a gas well drilling permit, the Pennsylvania DEP can also consider the impact of the proposed well on other public resources not explicitly mentioned in the Act.

4. Would it be possible to coordinate the construction/use of water storage impoundments during high stream flows (floods) with regional flood control efforts?

Given the priority of collecting fresh water during times of high flows, it may be possible to coordinate water allocations for gas drilling with flood control efforts in some areas.

5. EPA has primacy, but "Over the last few years, however, a series of contamination incidents have raised questions about that EPA study and ignited a debate over whether the chemicals used in hydraulic fracturing may threaten the nation's increasingly precious drinking water supply." so how do we protect ourselves in spite of this? <http://www.sciam.com/article.cfm?id=drill-for-natural-gas-pollute-water>

Although there have never been any problems associated with the small number of injection wells in Pennsylvania, there have been some problems reported with injection wells in other states. Any homeowner concerned about potential impacts from proposed injection wells or proposed gas wells should arrange for a thorough water test of their water supply BEFORE the gas drilling or injection well

are constructed. This water test must be collected by an independent representative of a state-certified water testing lab to be valid. These water labs can work with the homeowner to determine what chemical parameters should be tested but homeowners should expect to pay several hundred dollars for this testing.

6. Can carbon dioxide be used for the fracking process?

There is considerable research being conducted on both liquid and gaseous alternatives to water for fracking. Liquid carbon dioxide is one of those alternatives. Some preliminary research on liquid CO<sub>2</sub> showed promising results.

7. Would desalination/reverse osmosis technologies be of possible use for treating fracking fluids?

Yes, there are several treatment processes including desalination through evaporators and various membrane technologies (like reverse osmosis) that are being investigated for treatment and/or re-use of frac water. Issues that must be overcome with these methods are high costs and limited capacity to treat large volumes of waste fluids.

8. What is the process after a landowner notices water well contamination?

A homeowner that notices obvious water well contamination should immediately report the problem to the Pennsylvania Department of Environmental Protection. DEP has ten days to investigate the complaint and 45 days to determine if nearby gas well drilling is responsible. If the gas well drilling company is found to be responsible, DEP can issue orders to require that the water supply be returned to normal through replacement or treatment.

9. The high levels in the Mon River was found to only be partially due to the drilling industry

High levels of total dissolved solids in the Mon River in 2008 were determined to be due to a combination of low flows, acid mine drainage, and increased discharges of gas well wastes from treatment plants.

10. What kind of geology is necessary to allow for deep well injection?

I can't speak to the exact formations that are viable for deep well injection. In general, you need formations that are porous enough to allow fluids to be pumped in at high pressure.