

5. Conclusions and Recommendations

The specific conclusions reached by the expert panel are presented in several places in the report and we feel no need to repeat them here. We do think it is appropriate to describe what we see as the short-term and long-term consequences of the subsurface gas invasion.

In the short-term, the fugitive gas will continue to dissipate upward into the Cuyahoga Shale and into the Sharon Sandstone. This period of dissipation could last for several more years and will vary from property to property depending on the ability of bedding planes and joints in the Cuyahoga Shale to conduct the gas upward. No doubt there will be some properties where the gas will linger many months, perhaps years longer than under other properties. Zones of competent shale can prevent the gas from rising quickly and being flushed out. The evidence suggests that once the gas reaches the Sharon Sandstone that it dissipates quickly to the atmosphere.

The six month period in early 2008 demonstrated that intentional overpumping can help flush gas from the Berea Sandstone and the Cuyahoga Shale. This was successful at that time because most of the gas was still accumulating in the Berea Sandstone and the large transmissivity of the Berea Sandstone enabled the residential wells to purge the gas with good success. Now, in 2010, the gas is up in the Cuyahoga Shale and the Sharon Sandstone. Using wells to purge gas from shale is a difficult task because the pumping cone of depression in the water table does not spread far in shales and superposition of drawdowns from multiple wells is not likely. Pumping the Berea Sandstone to remove gas from the Cuyahoga Shale is also a difficult proposition because the Berea can produce large amounts of water but it cannot induce gas to flow downward into the aquifer from the Cuyahoga Shale. Pumping is expensive and using wells in the Berea to purge gas from the Cuyahoga could be a costly venture. Air sparging (i.e., injecting air under the water table) is successful in some settings. It is especially successful when combined with soil-vapor extraction, which puts negative pressures in the vadose zone enabling gas or air to move upward more readily to the lower pressure. Soil-vapor extraction systems can be pricey.

In the long-term, meaning 5 to 10 years from now, there may be no evidence of any impact on the quality of life in the impacted area.

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