Singh, Angela K (DOA)

From: Colombie, Jody J (DOA)
Sent: Thursday, January 09, 2014 1:20 PM
To: Singh, Angela K (DOA)
Subject: FW: Comments on proposed hydrofracking regulations for Alaska
Attachments: Analytica response to ADEC re hydrofracking Jan 2014.pdf

Please print and process

From: John Huntington [mailto:jgh@gatewayenterprises.us]
Sent: Thursday, January 09, 2014 11:45 AM
To: Colombie, Jody J (DOA)
Cc: er@analyticagroup.com; bnichols@analyticagroup.com
Subject: Comments on proposed hydrofracking regulations for Alaska

Attached is a document outlining Analytica's thoughts on the proposed regulations. We're offering these in the hopes they will be useful to you in the further development of the regulation.

Thanks
John

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09 January 2014

Subject: Analytica Group, LLC Public Comment Response to ADEC Regarding Hydrofracking

The purpose of these written comments is to provide input regarding the baseline analytical requirements being proposed in association with hydrofracking in the state of Alaska. With over 30 years of experience in the environmental arena and a focus on laboratory data, we have a perspective which we believe can be helpful. Our comments stem from actual case experiences where disputes regarding contamination sources have arisen. The fundamental concept is that good baseline testing can be of benefit to all stakeholders, including oil and gas operators and landowners. However, it is critical that the most appropriate tests be selected and the data be used properly.

Purpose and Difficulty of Background Monitoring

The goal of obtaining background data is a desirable one, assuming that adequate data can be obtained at a cost that is not damaging to the industry or to the State. We have seen a number of legal actions and conflicts associated with fracking where the availability of adequate baseline monitoring data would have allowed a faster and less expensive resolution of the issues.

However, it is important to understand that to have a robust baseline data set; the temporal variability of contaminants in wells must be considered, as well as the geology of the area, groundwater flow, etc. After years in the laboratory business we have seen dramatic variability of groundwater chemistry in individual wells over time, impacted by seasonality, volume of precipitation, groundwater depth, and a variety of other factors.

The regulations provide for a minimum set of data deemed appropriate by the State. This involves a single pre-fracking and a single post-fracking sampling event. We do not propose that longer-term sampling be routinely conducted, as this would be overly expensive and impractical. However, there should be guidelines to assist stakeholders in taking the natural variation of groundwater into account. As an example, what happens if arsenic (a common problem analyte in Alaska) is detected at a level below the Maximum Contaminant Level (MCL) in the pre-fracking tests but above the MCL in the post-fracking tests? There cannot be an automatic assumption that hydrofracking was responsible, since it is well-known that arsenic levels in groundwater vary naturally over a considerable range.

This same issue applies to most, if not all, of the toxic parameters in the proposed regulation. Simply because an analyte is not detected in a single analysis does not mean that it will not be present in a second sampling. There is no real substitute for long-term monitoring to distinguish between artifacts and natural variation and real detections indicative of contamination. In the present context, it is very likely this issue will arise from time to time, which may force the operators or the landowners to conduct multiple additional tests at considerable expense.

We therefore believe that the State should consider including some set of guidelines as part of the regulation to allow these kinds of issues to be considered in a manner that is technically sound and protects the environment.

Adequacy of Sampling Plan

The regulations require sampling and analyses be conducted according to EPA-approved sample collection and analytical protocols. We believe this statement should be expanded to include ADEC specifications for such protocols. We also believe that some additional guidance be provided for the specific cases of sampling private wells, which may require somewhat different approaches than wells specifically installed for environmental monitoring.

Analytical Protocols and Analyte Lists

For the volatile and semi-volatile organics, analyzing only for BTEX, GRO, and DRO may not be specific enough to detect contaminants that may be present and may later be ascribed to contamination from fracking. The EPA Method 8260/524.2 list of hydrocarbons should be included in the target list. This analyte list includes isopropyl benzene, isopropyl toluene, *n*-butyl benzene, *n*-propyl benzene, *sec*-butyl benzene, styrene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and *t*-butyl benzene. In addition, compounds associated with gasoline and other fuel additives such as MTBE, *t*-butyl ethyl ether, *t*-amyl methyl ether, and *t*-butyl alcohol should be included in the target list.

There are several reasons for inclusion of these target analytes. If these analytes are present in the baseline data, they provide a far more complete indicator of the type of contamination than the analysis of BTEX alone indicates particularly if older contamination exists in the groundwater. The aromatic compounds are also present in condensate and production water and knowing the background levels can be important in subsequent attempts to identify sources should contamination events occur after hydrofracking has begun. These are not exotic compounds and are included in the list of 8260 or 524.2 analytes most laboratories run routinely, so their inclusion should not increase the cost excessively.

Gasoline and other fuel additives are important to include as well. The presence of these additives in background wells could later be inappropriately used to support arguments regarding source identification. Specifically having data for *t*-butyl alcohol in background wells would be very helpful as this compound has been detected in recent years at a number of gas well sites, and the origin of the compound is still in dispute.

Analytical Methods proposed:

1. Detection limit requirements for baseline sampling in the absence of matrix effects should be established. Laboratories have different default detection limits for a number of these parameters. At a minimum, the detection limits should be established such that they meet the requirements of the drinking water program for regulated parameters. Although these analyses are not being conducted under the drinking water program, the ultimate goal is in part to determine levels that could be an issue for drinking water wells.
2. For the volatile organics, either Method 524.2 or Method 8260 should be allowed. For the semi-volatile organics, either Method 8270 or Method 525.2 should be allowed. These methods produce equivalent data but a given laboratory may be able to achieve better detection limits with one or the other method.
3. Organic results obtained by GC/MS should be reported to the MDL (Method Detection Limit). Without this specification, low level target analytes may be missed. However, in our view,

results that are obtained by GC only, such as GRO and DRO, should be reported only to the quantitation limit (PQL) as they are subject to interference and false positives below that level.

4. In our opinion, only dissolved metals need to be determined.
5. Turbidity should be included for raw well samples as a field parameter.
6. We do not see the need for analysis of oil and grease (HEM) as this method is used to determine heavier organics and fats, which are not part of the normal contaminants expected in these types of installations. If the intent is to try to identify polymeric materials that might be used as fracking chemicals in the deep subsurface, our view is that this will provide no clear identification of such materials and given the likelihood of interference from natural biogenic material, will only serve to confuse the issue with false positives. It would be better to include chromatographic methods, such as AK 103 (RRO) or tentatively-identified compounds from the 8270 analysis, which provide some indication of the nature of the substances detected.
7. In Alaska, the GRO and DRO analyses should be performed using Alaska methods (AK 101 and AK 102).
8. Allowed methods for the analysis of the inorganic parameters should include both SW-846 and Clean Water Act methods, in the same manner as recommended for the organic testing. For metals, EPA Methods 200.8 and 200.7 and SW-846 Methods 6010 and 6020 would be allowed as long as the desired reporting limits can be achieved.
9. The approach for radionuclide monitoring needs to be clarified. The proposed rule lists radium, but it is not clear if this is total radium, Ra-226+228, or what. Uranium, gross alpha, and gross beta are not mentioned. Thought should be given to a screening method (such as gross alpha and gross beta), since these methods are relatively costly and time-consuming.
10. The need for some of the elements listed, such as silicon and boron should be reviewed. These add to costs without providing much value in characterization of the samples. They may be present in hopes of identifying specific types of chemicals but our experience is that they are so common that they are largely not useful for this purpose.
11. Total dissolved solids (TDS) testing is essentially redundant with conductivity and is not needed for sample characterization.
12. Oxidation-reduction potential as a field parameter for well samples is also recommended as this can be helpful in interpreting water chemistry changes over time.

Other Comments:

1. There is a requirement stated in the document that drinking water test methods be used, but the test methods stipulated (8260, 8270, and 8015) are not drinking water methods. This should be clarified. It does not appear that the program will fall under the EPA drinking water regulations, so it would be better to stipulate that methods capable of achieving data that meet EPA quality criteria and detection limits similar to those required by the drinking water program be used.
2. The stipulation that laboratories maintain "nationally accredited programs" is inappropriate because no such programs actually exist. It would be more appropriate to specify that the laboratories be certified to perform the testing required by the State of Alaska, since Alaska maintains an extensive list of certified laboratories under both the Drinking Water and Contaminated Sites programs.

Sincerely,

John G. Huntington, Ph.D.
Technical Director
GWE/Analytica