From: "Miller, Gregory L Civ USAF AFMC ASC/WISE"
To: Edward Hanlon/DC/USEPA/US@EPA
Date: 02/28/2011 10:40 AM
Subject: Input to the SAB meeting 7 and 8 March 2011

Mr. Edward Hanlon
Science Advisory Board Staff Office
US Environmental Protection Agency
(Mailcode 1400R)
1200 Pennsylvania Ave., NW
Washington, DC 20460-4164

Dear Mr. Hanlon:

Because of the current law and huge, high dollar lobbying efforts on the part of oil and gas companies most people think of gas as being clean. This may be correct if one simply looks at the process of combusting gas.

$CH_4(gas) + 2\ O_2(gas) \rightarrow CO_2(gas) + 2\ H_2O(liquid) + 891\ kJ/mol$

Basically carbon dioxide and water – not bad!

But as you are aware, at the bigger picture there are a number of other environmental issues. Getting the gas out of the ground may have a much higher price tag than is currently being suggested.

To date there has never been a comprehensive study which looks at the long term impacts of hydraulic fracturing and ho! w it impacts our environment. There is basically little scientific data. I applaud you and your organization for the important work you are about to do. This is not a simple issue and it certainly should not simply be only about the jobs and the economy. We can always work to find alternate sources of energy – renewable energy. But finding fresh drinkable water may not always be that easy.

I am writing to you today to express my deep concern regarding Hydraulic Fracturing and the potential risk it creates to the environment and to the health and well being of the citizens of the our local community and to the United States of America.

To briefly review - Hydraulic Fracturing (also known as Fracking) is a process that oil and gas companies use to open up the rock formations deep under the earth. In the past, this practice was used mostly with vertical drilling. In recent years, the practice of “fracking” has increased around the country as oil and gas companies go after the deep shale formations in horizontal drilling operations. Fracking involves the use of large quantities of chemicals (ethylene glycol “anti-freeze” and muriatic acid to name two). There are possibly hundreds of others – each with varying degrees of toxicity. One (1) to seven (7) million gallons of fresh water are used with

each “Frack” and wells are usually “Fracked” multiple times (beginning with the stage furthest from the wellhead until the entire len! gth of the horizontal leg has been fractured). The oil and gas companies will tell you that only .5 to 2% of that water contains chemicals. Be reminded that 2 % of 3 million gallons is still 60,000 gallons.

The “Fracking” fluid can sometimes be reused but often the high content of Total Dissolved Solids (TDS) requires that more water and more chemicals must be added during consecutive “frackings”. Along with high TDS values, flowback can have high concentrations of major ions (e.g., barium, bromide, calcium, chloride, iron, magnesium, sodium, strontium, bicarbonate), with concentrations of calcium and strontium sometimes reported to be as high as thousands of milligrams per liter (Vidic, 20! 10). Flowback may also contain radionuclides (Zoback et al., 201 0) as well as volatile organic compounds (VOC), including benzene, toluene, xylenes, and acetone (URS Corporation, 2009).

How does a drilling company dispose of this chemical medley? The generally accepted practice is to put the solution into pits until it can be hauled off and then pumped into an “injection well”. Some companies use aerators (evaporators) to eliminate the volatile component. This reduces cost by decreasing the transport quantity. This process also puts nasty chemicals into the surrounding air. The practice of injection wells is another issue which poses a serious environmental risk.

The oil and gas community would have us believe that this practice is safe when in fact these chemicals have the potential of ending up in the drinking water aquifers via old drinking water wells, exploratory wells, production wells, abandoned wells (plugged and unplugged), injection wells, underground mines, old mine shafts, cracks in the rock formation, and caverns. The bottom line – we cannot guarantee that the drinking water will not be contaminated!

Doing a little research, it is not difficult to find a number of cases across the country which seem to indicate that hydraulic ! fracturing may be negatively impacting public health. In the pas t, there has been inadequate direction and funding to adequately study the impact the hydraulic fracturing. Today there are numerous families that live among the roughly 450,000 gas wells across 34 states and many of these families have health issues.

I have read the numerous submissions from the Texas community. This submissions are basically duplication and appear to be an attempt to derail the important work that you, the EPA, and the SAB are doing. But - there are important questions at hand that demand an answer. For far too long, the study of hydraulic fracturing has taken a back seat to other issues. For most of us, clean air and clean water are our most important natural resources.!

I applaud the efforts being taken to study this important issue.

I am confident that science and technology will be able to get concrete facts – if we continue the efforts that has been proposed in the current EPA study plan. The use of marking agents in the fracking fluid, for example would be one way to know for certain if the fracking fluid is getting into the local water supply.

I am grateful to know that the EPA has a proposed plan to study the subject of Hydraulic Fracturing and I encourage the EPA continue forth with this important effort.

As a citizen of this great county and I concerned landowner, I respectfully request that you include me as a stakeholder in the study of the "Potential Impacts of Hydraulic Fracturing on Drinking Water Resources”.

Thank You,
Sincerely,

Gregory L. Miller
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M.S. Aeronautical Science