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SENT VIA EMAIL

December 24, 2009

Valois Shea
U.S. Environmental Protection Agency Region 8
8P-W-GW, UIC
1595 Wynkoop Street
Denver, CO 80202
shea.valois@epa.gov

Subject: Comments on UIC Class V Draft Permit No. CO51237-08412 Issued to Powertech (USA) Inc. and dated October 2009

Dear Ms. Shea:

Thank you for the opportunity to comment on the draft underground injection control permit issued to Powertech (USA) Inc. for a proposed Class V well located in Section 33, Township 10N, Range 67W in Weld County, Colorado.

I hereby incorporate by reference my attached comments dated July 24, 2009 and all of the public comments submitted in this comment period, to the extent such comments address issues or detail facts or evidence not included in my comments.

1. The receiving aquifer is potentially endangered by storage of the injectate in metal tanks which may have been used to store hazardous waste.

Powertech proposes to store water produced by the pump test in several large metal tanks rented from Western Oilfields Supply Company (doing business as Rain for Rent.) The corrugated steel tanks, measuring 36 feet long by 8 feet wide by 11 feet high, are rented to oilfield companies, refineries, chemical plants, industrial companies, construction contractors, utilities, and government agencies. The tanks are used to temporarily store a variety of fluids and liquid wastes, some of which contain hazardous chemicals, toxins, and pathogenic microorganisms.

While Powertech proposes to clean and inspect the tanks prior to their use for storage of injectate, the proposed procedures for preventing contamination of the injectate are deficient.

2. It is unclear who will clean and inspect the tanks prior to being filled with water produced by the proposed pump test.

Powertech has provided the EPA with a one and a half page document titled “Produced Water Vessel – Cleaning and Inspection Procedure” which is a purported standard operating procedure (SOP) to insure that the tanks will be decontaminated prior to use. The document does not indicate who has been selected to conduct the cleaning and decontamination, nor does it spell out the qualifications of the contractor selected to do the work.

Powertech employees would be responsible for inspecting the tanks, according to the document. The SOP is silent on which employees would conduct inspections, and whether such employees are qualified to detect chemical or biological contamination.

3. The cleaning and inspection SOP does not explain how residual solids and liquid films will be removed from the tanks prior to chemical disinfection.

The SOP fails to describe the manual or mechanical processes to be used to remove residual solids from interior surfaces of the tanks. The SOP calls for pressure washing after, but not before, chemical disinfection. According to Centers for Disease Control guidelines on decontamination in healthcare facilities, “Thorough cleaning is essential *before* high-level disinfection and sterilization because inorganic and organic materials that remain on the surfaces of instruments interfere with the effectiveness of these processes (emphasis added).”

No mention is made in the SOP of removing oil and grease contamination, rust, mineral deposits, or biological films prior to chemical disinfection.

In addition, the SOP does not address how to remove residual solids, films, and liquids from difficult to clean areas such as joints, cracks, crevices, channels, fasteners, valves, manways, etc. These areas can harbor organic material and chemical residues which act as a physical barrier to protect microorganisms from decontamination, and which can inactivate certain chemical disinfectants such as bleach.

The Statement of Basis for the Draft Permit mentions that the storage tanks will be steam-cleaned, but there is no reference to steam cleaning in Powertech’s SOP.

4. The SOP’s “bleach wash” procedure is vague and does not conform to accepted decontamination guidelines.

The storage tanks for the injectate may have previously contained hazardous biological wastes, including raw sewage. Powertech’s SOP for chemical sterilization simply calls for “Perform(ing) bleach wash on interior and valves.”

Prior to cleaning and decontamination, the tanks may contain bacteria, bacterial spores, viruses, and fungi. These microorganisms have differing resistance to disinfection and sterilization efforts. In particular, bacterial spores are more resistant than other microorganisms.

Powertech's SOP does not specify the concentration of bleach that will be applied to the interior of the tanks. The contact time, from application to drying, is not specified. These parameters determine the efficacy of any disinfection or sterilization procedure.

Powertech does not indicate whether its standard is low-level disinfection, high-level disinfection, or sterilization, which includes inactivation of bacterial spores. And the SOP does not address whether household bleach or EPA-registered sodium hypochlorite will be used.

4. The tank inspection procedure is non-specific and inadequate to detect the presence of pathogenic microorganisms.

Powertech's SOP for inspection of the tanks following cleaning and decontamination is deficient. It calls for Powertech employees to "visually inspect the interior, exterior, and valves of the vessel to ensure cleanliness. Do not enter the vessel."

It is unclear how tanks this large can be adequately inspected by looking through a couple of 22-inch manway ports.

No testing for the presence of chemicals or microorganisms is required.

5. There is no plan to control the temperature of the injectate stored in the tanks to inhibit bacterial growth.

Once the tanks are filled, it is unclear how long the injectate will be stored in the tanks before injection into the receiving aquifer. Increases in the temperature of the injectate could potentially accelerate growth of bacteria left in the tanks or introduced during the pump test. Powertech has no plan to monitor and control the temperature of the injectate to curb growth of bacteria.

6. The Draft Permit and Statement of Basis contradict each other with respect to sampling and analysis of the injectate before injection.

Due to the risk of chemical and biological contamination of the injectate resulting from storage of the pump test water in potentially contaminated tanks and bacterial growth during the storage period, the injectate from each tank should be sampled and analyzed as close to the time of injection as is practical.

The Statement of Basis indicates that Powertech will sample the stored groundwater and have it analyzed before injection occurs. However, the Draft Permit explicitly does not require sampling and analysis.

Sampling and analysis should be required and should include testing for all chemicals and pathogenic microorganisms that could potentially exist in the tanks.

- 6. Powertech personnel are not qualified to develop procedures for cleaning and decontaminating the storage tanks, to inspect the tanks and verify that no residual chemicals or pathogenic microorganisms are present, and to ensure that the injectate has not been contaminated.**

The procedures for cleaning, decontaminating, inspecting, and maintaining the storage tanks should be developed by someone with a professional background in microbiology, toxicology, and disinfection/sterilization procedures.

Because of the numerous deficiencies in Powertech's proposal to store injectate in potentially contaminated metal tanks, and the resulting risk of contamination of the receiving aquifer, a final Class V UIC permit should be denied. Please call me if you have any questions regarding these comments.

Sincerely,

James B. Woodward

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Subject: Comments on UIC Class V Draft Permit Issued to Powertech (USA) Inc.

Dear Ms. Shea:

Thank you for considering these comments on the draft underground injection control permit issued to Powertech (USA) Inc. for a proposed Class V well to be located on Section 33, Township 10N, Range 67W in Weld County, Colorado.

The draft permit has several material deficiencies with respect to the protection of underground sources of drinking water, and a final permit should not be issued.

The applicant has not defined the area of the aquifer expected to be affected by the proposed pump test and subsequent injection operation. The applicant has conducted other pump tests in the Centennial Project area and in South Dakota, and has data indicating the approximate areas affected by the tests. The applicant did not include these data or an estimate of the area potentially-affected by the proposed injection activity in its permit application.

As the applicant has publicly stated, water quality in the proposed mining area is highly variable due to the presence of uranium roll-front deposits. According to EPA staff, the proposed injection well would be drilled into a uranium ore body. Multiple water samples should be taken in a valid statistical manner through the entire thickness of the aquifer to develop an accurate characterization of the water quality in the area affected by pumping and injection.

Instead, the applicant submitted test results from a single well located 500 feet south of the proposed injection well, asserting that this single sample would be “representative of the injectate”.

The closest domestic well to the proposed injection site is roughly one mile to the west. The applicant proposes to inject fluid into the Fox Hills aquifer at a depth of 500 to 550 feet. The permit application claims the domestic well is “much deeper than the zone of injection (620 feet)” and is “likely” screened in a part of the aquifer that is separated from the injection zone by a “continuous confining layer” of mudstone.

The 2001 Well Construction and Test Report for the domestic well indicates that the well is 620 feet deep but is screened in two intervals: 440 to 460 feet, and 520 to 560 feet. The applicant is in possession of this report and not only failed to include this information in its application, but made an assertion that appears to contradict the well construction report.

In addition, the applicant did not submit geologic well logs from the proposed injection area to support the contention that an impervious and continuous confining layer of mudstone separates the injection zone from the overlying Laramie aquifer with its higher-quality water.

The draft permit does not adequately address the potential for injectate to contaminate the Laramie aquifer by migrating up through improperly-plugged historical exploration drill holes. According to government and industry documents, thousands of holes were drilled in the area nearly 30 years ago when companies were prospecting for uranium. Several dozen, or perhaps hundreds, of these holes exist within one mile of the proposed injection site. Records show that these drill holes were routinely plugged in a manner that would not prevent leakage between the Fox Hills aquifer and the overlying Laramie aquifer. Instead of using cement plugs to separate and protect the aquifers, the holes were plugged with drilling mud, and in some cases, *beet pulp*. Cement was only used to plug the top few feet of the holes.

To make matters worse, local landowners have discovered and photographed plastic well casings that were broken off and remained buried for decades. The applicant has indicated that historical exploration operators were responsible for these broken casings.

Once the potentially-affected area of the aquifer is determined, the applicant should be required to locate all historical exploration drill holes in this area. The holes should be inspected and, if necessary, repaired using modern plugging methods prior to any injection taking place.

The draft permit does not require testing of the injectate prior to injection. The water extracted during the proposed pump test would be stored in metal tanks prior to reinjection into the aquifer. The applicant estimates it will take 45 days to inject the water.

According to the applicant, the water will be stored in “Baker” tanks, metal storage tanks provided by BakerCorp. BakerCorp rents the tanks for storage of a wide range of fluids generated by industrial operations, wastewater facilities, environmental remediation firms, refineries, and others. Baker tanks are used to store everything from storm runoff to sewage. Water contaminated with dirt, petroleum products, antifreeze, sludge, mine wastewater, and various hazardous wastes are stored in Baker tanks.

The applicant proposes to rent Baker tanks to store about 200,000 gallons of pump test water. The applicant says the tanks will be steam-cleaned before being used to store water from the Fox Hills aquifer. The draft permit does not require inspection of the interior surfaces of the tanks prior to use by the applicant.

After the tanks are filled and closed and the pump test is completed, the applicant is required to provide EPA with summary results of the pump test. After reviewing the results, the EPA decides whether to authorize the injection. For some undetermined period of time, the water will sit in the tanks. The draft permit does not allow the addition of a disinfectant, such as sodium hypochlorite, to the stored water to prevent growth of bacteria or other organisms.

Any injection permit issued to the applicant, as a condition for authorizing injection, should require full physical, metallurgical, chemical, radiological, and bacteriological testing and analysis of the injectate after storage in the Baker tanks. Authorization to inject should be withheld if any previously-tested constituents exceed baseline, or if any previously-untested substances exceed federal drinking water standards or are determined to endanger public health.

Further, all sampling, testing, and analysis should be done by independent consultants and labs under the direction of an independent party.

To conclude, I urge the EPA to deny a final permit for this proposed injection well because of the serious deficiencies and potential problems noted in these comments.

I hereby incorporate by reference all of the public comments submitted in this comment period, to the extent such comments address issues or detail facts or evidence not included in my comments.

Sincerely,

James B. Woodward