

WTE Column of March 22, 2014. Editor's Headline: "Oil [sic] Project Has a Bad Linc"

Wyomingites generally, and residents of Campbell County particularly, are urged to attend a Wyoming Department of Environmental Quality (DEQ) hearing on Thursday, March 26, regarding Safe Drinking Water Protection of the Fort Union Wyodak Aquifer. DEQ proposes to exempt / reclassify a portion of the aquifer to enable Linc Energy's underground coal gasification (UCG) experiment, which the Australian company hopes to expand into commercial production. The public may speak at the hearing in Wright, WY, at Wright Branch Library, from 4 to 6 PM, and/or send written messages to DEQ as below.

DEQ based its decision on a 1983 agreement between the State of Wyoming and the US EPA that sets parameters for underground injection control. Linc's application, reproduced on the DEQ website, shows that test burns would cover an 80-acre portion of the aquifer, at a depth of 1,100-feet. Coal would be ignited with oxygen and swamped with steam to convert the coal into "syngas." Linc plans to exhaust 1000 tons of coal to produce "approximately one million standard cubic feet of syngas per day"; it avers that conversion would proceed "without adverse environmental impact" even though the syngas would be flared off. A million cubic feet of gas, burning daily, without adverse consequences to the environment and surrounding communities?

After the D & R phase, Linc plans full-scale commercial production in Wyoming, though its Australian attempts have been problematical. On government behest, an independent scientific panel (ISP) studied the two companies, Linc Energy and Carbon Energy, that have undertaken UCG trials in Queensland, then submitted its report in 2013.

The report notes failed wellheads; mechanical design problems relating to ignition and injection; inadequate construction material for production wells. These were "lessons learned" that rectified problems in hindsight. Unresolved issues remain, however: "downstream" contamination from underground temperatures of up to 1500 degrees Celsius that produce "serious contaminants" when the chemicals escape into the surrounding environment. ISP notes that Linc's assessments have been "retroactive," after a "hazard event" had occurred. As concerns risk assessment, no "core integrated framework" exists.

Site-selection is crucial, the "single most important" aspect for risk-based evaluation. ISP recommends that site selection be based on geological surveys, hydrogeological modeling, and assessment of community and environmental contexts. Appropriate baseline studies should ascertain the (possibly toxic) compounds existing in the coal-seam aquifers. ISP recommends that governments establish rigorous guidelines.

Local residents' objections to Linc's Wyoming proposal will note that water needs in the area are increasing. Linc's application claims that the aquifer portion it seeks will not in future be used for drinking water because of its "mineral producing" potential: It contains hydrocarbons that may be "commercially producible." Yet the Fort Union aquifer contains good quality water at just over 500 total dissolved solids (TDS), and the Fort Union Formation is a commonly-used water supply in the Powder River Basin. Even at depth of 1,000 feet or more, several aquifers within the Gillette area serve both the city and surrounding subdivisions.

Linc's application states that DEQ requested a "demonstration project" prior to full-scale operations. The company claims it has "operated a demonstration facility in Chinchilla, Queensland, Australia, since 1999," where it continues to make synthetic crude "while maintaining environmental compliance."

The ISP report shows, however, that the Linc Queensland facilities are "pilot" that never progressed to "demonstration" projects. While small-scale projects are manageable (barely), their expansions become huge liabilities. Though the UCG industry has made strides in the past 30 years, progress has been limited. ISP notes that UCG is relatively new in Australia and that, globally, UCG experiments are far and few between.

Linc has been "unable to demonstrate" effective cleanup. According to ISP, "rubble from gasified coal (ash and tar)," from "collapsed overburden," and from "disturbed underburden" hinder the decommissioning. ISP notes lack of monitoring systems and "failure of infrastructure." Risk-based plans have yet to be developed. ISP notes lack of critical alarm systems that would permit rapid intervention, and lack of safety instrument systems. Sometimes, spills and "contamination plumes" proceeded directly into soils and water wells.

ISP recommended to the Queensland government that Linc continue for six months, provided the company "immediately propose, test, and establish" a planning and action process that shows its commitment to decommissioning. Linc must demonstrate environmental safety via "event-based milestones." A risk protocol for decommissioning should include a "conceptual model," a relevant "numerical model," and future action "based on sampling." Long-term critical risks must be assessed, and besides, an underground cavity of "significant dimensions" must exist for "full comprehensive demonstration." Governmental guidelines need to include establishing "Go/No Go gates" for decisions regarding development of any site; until then, "no commercial facility should be commenced." ISP cautions against further ignitions until long-term environmental safety can be demonstrated.

Clearly, before the Linc project goes any further in Wyoming, site selection needs scrutiny. Next, Wyoming should wait until Linc has cleaned up its Queensland operation, which will give state and federal governments time to develop the UCG guidelines recommended by ISP. A copy of the 50-page report was submitted to DEQ sometime ago.

DEQ does not accept emailed comments. I hand-delivered my comments to

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