Northeast Regional Geothermal Workshop
Tuesday, March 29th, 2011
EPA New England Lab, No. Chelmsford, MA

State Roundtable Notes

The State Roundtable was lead by Denise Springborg, EPA Region I UIC contact. States were asked to provide general comments on the workshop, express any concerns, and provide answers to the questions below. Following the workshop, EPA Region I and NEIWPCC will develop a regional "wish-list" of geothermal technical, policy, and planning needs.

General Comments

- There are numerous professions and regulating authorities involved in the geothermal industry. It was strongly suggested that **future discussions involve the energy sector and state and local plumbing boards/inspectors.** The energy sector promoted these systems through tax credits, etc. and they should be aware of state concerns regarding proper construction and water quality concerns.

  State Plumbing Boards direct activities at the local level. If they are not educated on proper installation procedures and state regulations, they in turn cannot educate local plumbing inspectors. For example, the primary coil is not double-cased which is a plumbing code violation. MassDEP is developing guidance for plumbers to improve their knowledge.

- **Do we have documented evidence of hazardous releases from geothermal systems that effected human health or the environment?** If this information is available, it could be used to educate and promote awareness. NY gave one example in which propylene glycol contaminated the drinking water at a school in Queens, NY; children vomited and were sent to the hospital. Although this was not the result of a geothermal system, it underscores the importance of proper installation and maintenance of any system that could release into drinking water. No geothermal examples were cited.

1. What technical information and training seminars are needed to assist Northeast environmental agencies?

MA – additional training for the local level (boards of health, plumbing and building departments)
ME – more info on different antifreezes to use (which ones to require and/or recommend)
NH – there is a need to update and revise the EPA Class V UIC Study, Volume 19 – Heat Pump & Air Conditioning Return Flow Wells
CT – Technical information on bleeding – why is it necessary?; Carl Orio, Chairman of Water Energy Dist Inc. can provide this information

2. What do you want to learn about other Northeast programs?

NH – Some states require system owners to test water quality and report the data (i.e. at start-up, after one-year, etc. – different requirements for residential and commercial systems). Those states that do require the data do not have the resources to ensure it is collected, entered in a database, and analyzed. States are curious about each others data and requirements. MA suggested a possible EPA intern project; EPA will look into it.

3. Should we, as a region, try to standardize program guidelines

ME and NY – would support regional and/or national standards

NEPGA – will work toward this end for our region

4. What is your state's top program concern/need?

NH – Is drinking water quality (bacteria, pH, and materials leaching) affected in standing column dual use wells (the same well is used for drinking water supply and the geothermal system)? Do geothermal systems affect subsurface biota/bacteria? How bacteria in both open and closed loop systems are affected is not well understood. A Stockholm paper was written on the microfloral community upstream and downstream of wells. A second paper was published; however a change in 15 degrees killed the ambient community they were studying. Geothermal systems may or may not create a problem depending on the existing soil conditions and microbiota.

CT – "Mega-geothermal" systems (down to 20,000 ft) and how to address them in the regulations (NH has some experience with these).

MA – (1) Health effects associated with refrigerants: studies have been conducted on inhalation effects, but we need information on effects associated with groundwater releases; most are in gaseous-vapor phase, are highly soluble, and probably bubble to the surface; and (2) Impact of geothermal wells on adjoining property owner's groundwater when wells are constructed in urban areas or areas with small lots.

RI – (1) Water quality concerns – particularly naturally occurring radionuclides that are discharged outside the aquifer: how do other states address these concerns?; and (2) As states develop or modify UIC regulations, continued state and EPA coordination is needed.

ME – (1) ME's draft regulation only includes/proposes propylene glycol; however, based on workshop discussions, they have concerns and would like more information on pros and cons of various antifreezes (MA has done a lot of research in this area and can share the information); and (2) Water quality concerns and health effects along with radionuclides in dual use wells.

VT – (1) In VT, open loop systems must discharge into the same aquifer; what are other states requirements?; and (2) VT has the same concerns as others regarding thermo interference and refrigerant use.

NY – (1) Multi-sector coordination and education is very important, including meeting at the local level with associations of towns and/or mayors in addition to all the trades and professions involved in the industry (free training is very helpful!); and (2) Effects on microbial populations.