



CLASS V UIC STUDY FACT SHEET *EXPERIMENTAL WELLS*

What is an experimental well?

Experimental wells are Class V underground injection control (UIC) wells used to test new or unproven technologies. This well category includes: experimental “tracer study” wells and aquifer thermal energy storage (ATES) systems. Experimental “tracer study” wells are used to inject chemicals and evaluate hydrogeological parameters. ATES systems are used to store thermal energy by injecting heated and/or cooled water into an aquifer.

What types of fluids are injected into experimental wells?

Experimental tracer study wells inject many different types of substances, including organic dyes, inert gases, short half-life radionuclides, rare earth metals, and inorganic or organic compounds. ATES system wells inject heated or cooled process water, which may originate from native ground water, surface water, or potable water.

Do injectate constituents exceed drinking water standards at the point of injection?

Only one experimental tracer study well was reported for which injectate did not meet the primary and secondary drinking water standards and health advisory levels (HALs). The injectate for this tracer well exceeded drinking water standards for sulfates and chloride, and contained arsenic and molybdenum at levels greater than HALs. Injectate data are not available for ATES system wells.

What are the characteristics of the injection zone of an experimental well?

The injection zone characteristics for experimental wells vary widely depending upon the purpose of the well. Wells used for tracer studies may inject into contaminated aquifers, sometimes including aquifers that serve as drinking water supplies. Experimental ATES system wells inject water into the same formation from which it was withdrawn.

Are there any contamination incidents associated with experimental wells?

No contamination incidents have been reported for experimental tracer study wells. While no contamination incidents have been reported for ATES system wells, several reports mentioned that the concentration of constituents in ground water receiving fluids from some ATES wells were higher than background levels.

Are experimental wells vulnerable to spills or illicit discharges?

Experimental tracer study wells and ATES system wells are not vulnerable to spills or illicit discharges because injectate quality is controlled by the conditions of the experiment being conducted or by the conditions of the process operation.

How many experimental wells exist in the United States?

There are 396 documented experimental tracer study wells in the United States. No operating ATES system wells are believed to exist in the United States.

Where are experimental wells located within the United States?

The documented experimental tracer study wells are located in six states: SC, CO, NV, ID, TX, and WA. More than 97 percent of the documented tracer study wells exist in SC (207 wells or 52%) and NV (179 wells or 45%, although some of these wells are reportedly now plugged and abandoned). Experimental tracer study wells are also believed to exist in MA, FL, MS, and IL. ATES systems were recently operated in MN and NY.

How are experimental wells regulated in states with the largest number of this type of well?

Permit by rule: CO, TX, ID (for wells <18 ft. deep)

Individual permit: SC, NV, WA, and ID (for wells >18 ft. deep)

Where can I obtain additional information on experimental wells?

For general information, contact the Safe Drinking Water Hotline, toll-free 800-426-4791. The Safe Drinking Water Hotline is open Monday through Friday, excluding federal holidays, from 9:00 a.m. to 5:30 p.m. Eastern Standard Time. For technical inquiries, contact Amber Moreen, Underground Injection Control Program, Office of Ground Water and Drinking Water (mail code 4606), EPA, 401 M Street, SW, Washington, D.C., 20460. Phone: 202-260-4891. E-mail: moreen.amber@epa.gov. The complete Class V UIC Study (EPA/816-R-99-014, September 1999), which includes a volume addressing experimental wells (Volume 15), can be found at <http://www.epa.gov/OGWDW/uic/cl5study.html>.
