



CLASS V UIC STUDY FACT SHEET *AQUIFER REMEDIATION WELLS*

What is an aquifer remediation well (ARW)?

ARWs are used to clean up, treat, or prevent contamination of ground water. These wells may be associated with RCRA or Superfund cleanup projects.

What types of fluids are injected into ARWs?

Treated ground water (from pump and treat systems), bioremediation agents, or other contaminant recovery enhancement materials.

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

For many reagents and nutrients injected into ARWs, the concentration in the injectate likely exceeds drinking water standards or health advisory levels because high concentrations of such reagents and nutrients are needed for them to serve their intended purposes. The data available for these wells are insufficient to establish meaningful comparisons between concentrations of injected reagents or nutrients in ground water monitoring wells, located downgradient from the ARW where they were injected, and the corresponding drinking water standards and health advisory levels.

What are the characteristics of the injection zone of an ARW?

ARWs typically release fluids into a contaminated aquifer where constituents of concern exceed drinking water standards. In some cases, re-injection of treated ground water from an onsite pump-and-treat system may occur into a different formation than that which is being remediated, with the objective of recharging the aquifer. In these cases, the receiving formation may be an underground source of drinking water (USDW) and the injectate is monitored to ensure that constituents present in the injectate do not exceed drinking water standards.

Are there any contamination incidents associated with ARWs?

One contamination incident associated with an ARW has been reported. The incident occurred at the Hassayampa Landfill Superfund Site in Arizona. A failure in an automatic cut-off valve in a pump-and-treat system, concurrent with a failure in the treatment unit, resulted in the accidental injection of untreated contaminated ground water into a clean USDW. The extent of the impact on the USDW or to drinking water wells was not reported.

Are ARWs vulnerable to spills or illicit discharges?

Notwithstanding the accidental release scenario described above, ARWs are not likely to be vulnerable to spills or illicit discharges because injectate quality is controlled by the conditions of the operations being conducted.

How many ARWs exist in the United States?

There are 10,222 documented ARWs and 10,756 ARWs estimated to exist in the United States. However, the actual number of ARWs could be between 12,000 and 14,000, due to the number of wells reported as “under construction” at the time of the survey.

Where are ARWs located within the United States?

The documented ARWs are located in 39 states and territories. A significant fraction (65 percent) of the total is concentrated in SC (3,409), TX (1,177), OH (1,170), and KS (936).

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

Permit by rule: TX

Individual permit: KS, OH, SC

Where can I obtain additional information on ARWs?

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 ARWs (Volume 16), can be found at <http://www.epa.gov/OGWDW/uic/cl5study.html>.
