

Underground Injection Control (UIC)

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General Information

Kansas is one of 34 states that manage the Class I-V UIC program for the U.S. Environmental Protection Agency (U.S. EPA) through geologists that work for the Kansas Department of Health and Environment (KDHE) and the Kansas Corporation Commission (KCC). KDHE regulates Classes I, III, and V injection wells.

- **Class I Wells:** Used to inject hazardous and non-hazardous industrial and municipal wastewater into deep, confined rock formations. Disposal typically occurs thousands of feet below the lower most underground source of drinking water (USDW). Class I wells are highly technical with many layers of protection between the USDW and the injected waste and have many regulatory tests and monitoring requirements to maintain compliance. The waste water disposed of in Class I wells cannot be feasibly treated, stored or disposed by other methods.
 - Industries that utilize Class I wells: refining, metal production, chemical manufacturing, pharmaceutical industry, commercial disposal, food production and municipal wastewater treatment
 - Kansas has the 3rd most Class I injection wells in the country
 - Nearly all Kansas Class I disposal wells inject into the Arbuckle Formation which is also has the majority of withdrawal and injection from Class II wells.
- **Class II Wells:** Wells used to inject fluids, primarily brines, associated with oil and natural gas production into deep confined rock formations. These wells are constructed similarly to Class I wells, but are regulated by the KCC.
- **Class III Wells:** Wells used to inject fluids for the dissolution and extraction of minerals. Most of the Class III wells managed by KDHE are operated by well-known international salt companies.
 - Kansas has the 6th largest Class III inventory
 - Operators in Kansas perform sonar and gamma logs to help them maximize extraction of the resource while staying in regulatory compliance. Kansas regulates the well to ensure no contamination of the USDW occurs during the mining process and regulates the caverns to help prevent sinkholes and collapses.
- **Class IV Wells:** shallow wells used to dispose of hazardous or radioactive wastes into or above formations that contain groundwater. In 1984, the U.S. EPA banned the use of class IV injection wells.
- **Class V Wells:** used in inject non-hazardous fluids underground, i.e. storm water drainage wells, septic system leach fields and groundwater remediation wells.
- **Class VI Wells:** Wells which inject carbon dioxide for long term storage also know as sequestration, these wells are regulated by the U.S. EPA, Region 7.

Directions to KDHE and Visitor Parking

- **KDHE Geology and Well Technology Fall 2019 Fall Seminar/Tech Fair – October 8-9, Wichita, KS (New 4/19)**
- Class I Disposal Well Consultants Rev. 3/19
- Draft Permits - None at this time
- KDHE Certified Laboratories Listing
- Links
- Permit Process Flow Chart (Simplified Version)
- Records Request Form
- Regulations
- Quality Management Plan, KDHE Underground Injection Control Program
- UIC Forms, Procedures and Guidance Documents

Earthquakes

Kansas Earthquakes- Earthquake activity in the Earth's crust is known as seismicity. When linked to human activities, it is commonly referred to as "induced seismicity." Industries that have been associated with induced seismicity include oil and gas production, mining, geothermal energy production, construction, underground nuclear testing, and impoundment of large reservoirs (National Research Council, 2012). In recent years earthquake activity has skyrocketed in central Kansas, this dramatic rise in earthquakes has coincided with a dramatic rise in the volume of injected fluids into the Arbuckle Formation in Oklahoma and Kansas. Research conducted by the KGS and many others indicate that the earthquakes and the injection volumes are connected and have other impacts beyond shaking the ground. The earthquakes caused researchers to look closer at other data that had been collected for several years at Class I wells. The data shows that while Class I injection volumes remained steady the pressure and as a result the fluid levels in the wells were rising dramatically. As fluid levels rise and approach the surface, wells lose their ability to operate. As a result, KDHE has implemented a Waste Minimization Plan to be included in permits. KDHE is actively working with our operators and stakeholders to try to prolong the life of their Class I wells and keep disposal into the Arbuckle Formation a viable option.

- Resources on Kansas Earthquakes from the Kansas Geological Survey
- Resources on Seismicity in Kansas from the Kansas Geological Survey
- Resources on Earthquake Hazards from the United States Geological Survey
- Minimizing and Managing Potential Impacts of Injection Induced Seismicity, U.S. Environmental Protection Agency, November, 2014

UIC Forms, Procedures and Guidance Documents

Note: The files linked below require the Adobe Acrobat Reader® plugin. For assistance with download, installation, or use of the plugin, please contact Adobe Systems, Inc.® If you experience a problem with one of our files which you have successfully downloaded, please contact kdhe.webmaster1@ks.gov for assistance.

- Class I
- Class III
- Class V

Regulations

- 28-46. Underground Injection Control Regulations

Links:

- Kansas Corporation Commission
- U.S. Environmental Protection Agency
- U.S. EPA, UIC Program
- Salt Solution Mining Research Institute (SMRI)
- Groundwater Protection Council (GWPC)

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