



UNDERGROUND NEWS

Providing Information to the Water Well, Underground Injection Control (UIC) & Underground Hydrocarbon Storage (UHS) Industries in Kansas

SPRING 2014

TASK FORCE NAMED by Mike Cochran, LG

An issue of increasing concern is that of induced seismicity and the possible link to the injection of wastewater associated with oil and gas production. Induced seismicity is commonly defined as typically small earthquakes resulting from human activity that causes a rate of energy release, or seismicity, which would be expected beyond the normal level of historical seismic activity. There have been induced seismicity events recorded in other states and there has been recent seismic activity in south-central Kansas. Kansas has taken the proactive approach of addressing this issue with Governor Brownback's formation of a task force consisting of the Kansas Geological Survey, Kansas Corporation Commission and Kansas Department of Health and Environment to study the possible correlation of fluid injection and seismic activity. Here is the press release announcing the Governor's formation of the Induced Seismicity Task Force:

PRESS RELEASE - FEBRUARY 17, 2014

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Governor Sam Brownback names task force to develop State Action Plan for induced seismicity Stakeholder meeting set for April 16

Topeka – Today Governor Sam Brownback named a state task force to study and develop a State Action Plan for Induced Seismicity related to oil and gas activities in Kansas. Induced seismicity refers to minor earthquakes resulting from human activity.

"This is a matter of public safety," said Governor Brownback. "Recent seismic activity in south-central Kansas has raised concerns that fluid injection might be related. I have asked the task force to study the issue and report back with a State Action Plan."

The task force members include:

Rex Buchanan, Interim Director, Kansas Geological Survey
Kim Christiansen, Executive Director, Kansas Corporation Commission

Mike Tate, Chief, Bureau of Water, Kansas Department of Health and Environment

"There is data that point to a possible correlation between fluid injection and seismic activity," Buchanan said. "We need to assess that data, get more information through seismic monitoring, and understand why the area has experienced increased seismic activity recently."

Oil and gas is a cornerstone industry in Kansas generating nearly \$4.3 billion each year, and employing 118,000 Kansans each day. The task force has been directed to ensure the safety of all Kansans, and to consider the impacts to industry and the environment. The plan will also include an assessment of Kansas' seismic monitoring capabilities to determine if additional resources are needed to accomplish better monitoring.

The task force will hold a meeting with invited industry and stakeholders on April 16 at the Eugene M. Hughes Metropolitan Complex, Wichita State University, 5015 E. 29th Street N., in Wichita, Kansas. For more information, please contact the Kansas Corporation Commission at (785) 271-3140.

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Kansas GEOLOGY SECTION REGULATORY AGENDA

by Mike Cochran, LG

- Underground Hydrocarbon Storage Program – Developing conceptual draft regulations for internal KDHE discussion. A meeting was held with industry to obtain input. Input is still being obtained. The proposal is to modify existing regulations including:
 - reducing the frequency of the casing inspection log
 - allowing business entities such as LLCs and MLPs to use the financial test for financial assurance
 - add definition for plug/monitor status
 - option to convert to plug/monitor status
 - eliminating water sampling while drilling new monitoring wells
 - eliminating well spacing/diameter ratio in requests for approval of caverns with less than 100' web thickness
 - delete requirements for testing cement samples
 - clarifying that for brine ponds the 6-inch maximum thickness refers to each layer of compacted material, not the total thickness of compacted material and if no problems are indicated

GEOLOGY SECTION COMPLIANCE UPDATE FOR SEPTEMBER 1, 2013 TO PRESENT

by Cynthia Khan, Mark Jennings and Richard Harper

- The UIC Program – One Class I industrial waste disposal well failed to maintain annulus pressure and one Class V well had an unauthorized injection. Violations were satisfactorily resolved and did not require the issuance of an order to obtain compliance.
- The UHS Program – January 1 through December 31, 2013: While there was an increase in the number of reported brine releases due to increased operator awareness and reporting of very small spills (0.25 - 5 gallons) the overall volume released was a 60 percent reduction from 2012. This resulted in approximately 158 barrels (6,636 gallons) being release to the environment. The majority of these releases resulted from line leaks. KDHE is working with the storage industry to reduce these numbers even further. Industry continues to properly cleanup these releases to minimize the impact to the environment. In order to prevent spills the industry has replaced or plastic slip lined a number of brine lines and this activity continues.
- The Water Well Program – Eight water well contractor licenses were revoked for failure to complete the requirements for license renewal.

Chief of Underground Hydrocarbon Storage Unit Retiring by Mark Jennings, LG

After 20 years working for the State of Kansas, the last nine plus years with the Underground Hydrocarbon Storage Unit at KDHE, I have decided to retire, effective April 1. It has been a great experience working with the people and companies that comprise the underground storage industry in Kansas. I have learned a lot as I had only minimal knowledge of how salt cavern storage of hydrocarbons worked before coming to KDHE. It has been very rewarding working with the storage industry to implement the requirements of the comprehensive set of regulations that became effective in 2003. I am confident that the changes implemented by the storage facility operators to comply with the regulations have made the industry safer and more efficient. I really appreciate the cooperation of the storage industry personnel in implementing these changes; what has been accomplished could not have been done without it. I hope that whoever takes my place as head of the UHS unit has the same positive experience that I have had. Although I will no longer be working for the State of Kansas, I do not plan to completely "fade away". I hope to be able to use my accumulated experience as a professional geologist in new ways; I hope this includes working with some of you again in the future.

Mark Jennings, L. G.

Web News

The following changes have recently been made to the Geology Section Web site:

- **Geology** (<http://kdheks.gov/geo>)
 - Updated Organizational Chart
 - Governor's 50 Year Vision for the Future of Water in Kansas
 - Hydraulic Fracturing – Natural Gas
 - Office Closings
 - Updated Regulatory Agenda
 - Added Change of Address Form
- **UHS** (<http://kdheks.gov/uhs>)
 - Revised Brine Pond Monitoring Report (Quarterly)
 - Revised Inspection Report for Underground Storage Wells
- **UIC** (<http://kdheks.gov/uic>)
 - Added Procedure UICIII-10
- **Water Well** (<http://kdheks.gov/waterwell>)
 - Updated Water Well Contractor List
 - Added "Frequently Asked Water Well Questions"
 - Added "How to Correct a WWC-5 Form when Initially Entered Through KOLAR"

*** WATER WELL CONTRACTORS ***



ONLY 1 WHITE COPY OF
WWC-5 FORM NEEDS TO BE
SUBMITTED TO KDHE.
MAKE A COPY FOR YOUR
FILES AND SEND ONE TO
WATER WELL OWNER.

UNDERGROUND NEWS

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Visit us at:

<http://kdheks.gov/geo>

Kansas Groundwater Association Convention and Exposition by Richard Harper, LG

The Kansas Ground Water Association (KGWA) held its 66th annual Convention and Exposition in Hutchinson, Kansas, on January 22-24, 2014. The Kansas Department of Health and Environment (KDHE), Bureau of Water, Geology Section plays a major role in the Convention and Exposition as the Geology Section regulates the Kansas Licensed Water Well Contractors, which were in attendance. KDHE's staff members that participated were Mike Cochran, Jeffrey Hand and Richard Harper. The Geology Section made two presentations, manned a booth at the exposition, provided 22 contractors the opportunity to train and take the water well exam and attended two KGWA Board Meetings. The KGWA's 66th Convention and Exposition was a huge success as it was attended by 150 Kansas Licensed Water Well Contractors, 60 Manufacturers and Suppliers which occupied 42 exhibitors Booths.



Geothermal Wells and the Potential to Encounter Oil and Gas or Saltwater Bearing Zones by Richard Harper, LG

In Kansas closed loop geothermal systems are often drilled to depths of 200-400 feet. In certain parts of the state, at these depths there is the potential to encounter oil, gas or salt water bearing zones. When such zones are encountered, there is the risk to the environment and in some cases to the public health and safety. The integrity of the well grout used to prevent fluid migration in the borehole can also be compromised.

The well driller needs to be aware of the oil, gas or salt water zones that might be present at the project location so that these zones can be avoided. This may include the need to drill a test borehole to obtain hydrogeologic information and a review of available information.

Should an oil, gas and/or salt water zone be encountered during the drilling of a geothermal well, the zone must be isolated by cement for the remainder of the borehole to protect the public health, safety and the environment and the integrity of the borehole. The appropriate Kansas Corporation Commission (KCC) District Office should be contacted for assistance with the plugging. The KDHE Water Well Program also needs to be contacted.

Contact information for KCC and KDHE, a link to the KCC Oil/Gas well database and general maps showing the locations and depths of oil/gas and salt water bearing zones can be found at: <http://kdheks.gov/waterwell>.



**4 CEU Credits Available
For BONUS Training Day**

GEOS GEOLOGY
SECTION FALL 2014 SEMINAR

**Thursday, September 11, 2014
Wichita, Kansas**

**Including a BONUS Training Event Featuring
two separate 2 hour sessions scheduled for
Wednesday, September 10, 1:00 – 5:00 pm.**

- **Kansas On-line Automated Reporting (KOLAR) of WWC-5 Forms.**
 - **Presentation and Assistance Registering on KOLAR**

Note: KOLAR can only be used by a KDHE licensed water well contractor

- **Underground Injection Control (UIC)**
 - **Class I Disposal Wells.**

**You can attend one
or both of these sessions.**

➤ **Kansas On-line Automated Reporting (KOLAR) of WWC-5 Forms.**

For a water well contractor who may be apprehensive about signing up for KOLAR, **NOW** is the time to attend the two hour training course being offered on Wednesday, September 10. There will be a step by step presentation on how to register for KOLAR and how to fill out the online WWC-5 form. Using KOLAR is quick and convenient in that it is easy to follow and will catch any mistakes that you can then correct. Richard Harper will be present to answer questions you may have about using KOLAR. Deb Biester and Richard will assist you with the KOLAR registration process. You will receive two credit hours for attending this training session.

➤ **UIC Class I Disposal Wells.**

Do you want to know more about the UIC Program and Class I industrial wastewater disposal well, or a better understanding of the program? Then this training session is for you. Topics that will be covered include program history, permit applications, permitting, well design, testing, monitoring and reporting. You will receive two credit hours for attending this training session.

Details coming April 1, 2014 to <http://kdheks.gov/geo>
Upcoming Seminars, Expos, Conferences and Workshops

LPG Snubbing in Kansas By Jeffrey Hand

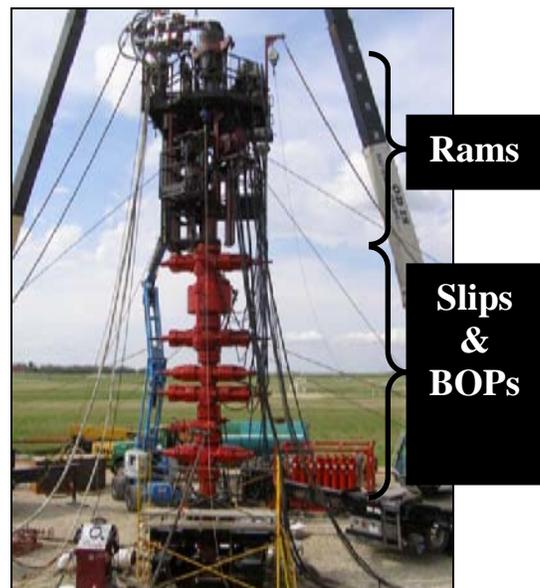
This past May, for the first time in the KDHE regulated underground hydrocarbon storage industry, snubbing was utilized as an alternative method to the conventional well workover. Snubbing is a common form of workover in the oil patch and offshore oil platforms in which an active well is worked on while under subsurface formation pressure.

A conventional well workover required the pressure of the storage well to be reduced to zero so the components of the wellhead and tubing within the well bore can safely be removed. Reducing the pressure is a long controlled process which may take several years to complete. Based on regulatory requirements some of the wells are depressurized (blown down) every five years for a workover. This activity could mean the well might be out of service for half of a five year compliance cycle while it is being blown down. This frequent depressurization is suspected of playing a role in reducing the structural integrity of broad cavern roofs in these types of wells.

Snubbing allows for the well to be worked over in a short period of time while under reduced or at operational pressures (typically below 500 psi). This is achieved by using specially designed equipment to control the pressure within the well. First, a series of packers (plugs) are installed at the bottom of the tubing string inside the well bore. These plugs prevent the release of tubular fluids due to the pressure within the well. Fluid pressure inside this isolated section of tubing is then bleed-off into a vac truck or onsite brine pond. Second, the well tubing is slowly pulled out of the well bore while well pressure is controlled by a series of blow-out preventers (BOPs), slips (to provide a seal around the outside diameter of the tubing string), and rams (hydraulic jacks used to lift and lower) the tubing being removed. Each joint of tubing is then removed for the entire depth of the well ranging from 600-1,000 feet. Third, the required logging is run, after which new tubing is installed in the reverse order of the previous steps. Finally, once the workover is completed and the snubbing unit removed, a casing and cavern mechanical integrity test is performed.

Although snubbing has increased risks due to elevated work platforms and well pressure, as well as increased cost, the advantages to a quick well turnaround is a driving factor. Based on the number of annual well workover plans already approved it looks like snubbing will be used more frequently on wells that are difficult to blow down.

Snubbing unit pulling tubing



Water for Kansas Future by Susan Stover, P.G

Providing a reliable water supply to support and maintain a growing Kansas is essential for our future. Governor Brownback called for a 50 year vision to lay the necessary ground work to provide for our water. In 50 years, if there are no changes in the current pumping patterns of the Ogallala High Plains aquifer, it will be 70 percent depleted with another roughly 40 percent unable to yield 400 gpm. The *Vision for the Future of Water in Kansas* will align the priority of growing the Kansas economy with strategies and actions necessary to ensure reliable water to support our state's future.

We invite ideas, suggestions and vision from the groundwater, underground hydrocarbon storage and underground injection control industry professionals. This is the time to suggest new ways to approach water use and management. Everything is on the table for discussion. More than one person has suggested the Kansas Water Appropriation Act for water right priority needs reviewing and possibly adjusted. Will desalination play a big role in meeting our water demands? What about recycling and reuse of produced water? Are there lesser aquifers that could be more effectively utilized? Are there barriers that need to be removed? Is there more information needed to implement potential ideas? The Kansas Water Office and Kansas Department of Agriculture are meeting with organizations, stakeholders and communities. Contact the Kansas Water Office (www.kwo.org; 1-785-296-3185) for someone to attend your organization meeting to discuss the vision process and get your input. Ideas may also be submitted to kwo-info@kwo.ks.gov. In May, 2014, a draft *Vision for the Future of Water* in Kansas document will be prepared based on input given from stakeholders, agencies and the Governor's Council of Economic Advisors. The final document will be presented at the Governor's Water Conference to be held October 23-24, 2014.



Financial Assurance "Fitness" by Cynthia Khan, LG

Underground Injection Control (UIC) facilities using the financial test (self insurance) mechanism to demonstrate financial assurance must submit updated financial assurance information to KDHE within 90 days of after close of their respective corporate fiscal year. Facilities using the Letter of Credit or Performance Bond need to make sure these instruments do not expire, since some financial institutions have revised these financial assurance instruments from automatically renewing to automatically expiring. If you have questions regarding the status of your facility's financial assurance demonstration or are confused about your status, please contact Cynthia Khan at 785.296.5554 or by email at ckhan@kdheks.gov.

Did you know . . . ???

Water Efficiency: Our Responsibility

- Earth may be known as the "water planet", but even though about 70 percent of its surface is covered by water, less than 1 percent is available for human use. Water supplies are finite and we can all help protect this critical and precious resource.
- It takes a considerable amount of energy to deliver and treat the water you use every day. Letting your faucet run for five minutes uses about as much energy as letting a 60-watt light bulb run for 22 hours.
- The average American family uses more than 300 gallons of water per day at home. Roughly 70 percent of this occurs indoors.

How Much Water Do We Use?



Source: American Water Works Association Research Foundation, "Residential End Uses of Water," 1999

KDHE Geology Section Contact List:

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MEMBER:



KDHE's Mission is to Protect and Improve the Health and Environment of all Kansans.