



CLASS III SALT SOLUTION MINING WELLS

**GUIDANCE FOR DEVELOPING A MONITORING PLAN
FOR CAVERN INJECTION VOLUMES AND INJECTION
PRESSURE REQUIRED BY REGULATION K.A.R. 28-46-30A(A)**

UICIII-G3
(5/11)

Narrative:

Regulation K.A.R. 28-46-30a(a) requires that on or before August 6, 2012, each permittee shall submit a facility monitoring plan for monitoring injection and withdrawal volumes and injection pressures that meets KDHE's approval and ensures the protection of public health, safety and the environment.

Ensuring proper cavern configuration and dimension development in accordance with the regulations and ensuring integrity of the cavern is maintained by preventing over pressuring results in both a stable cavern that is protective of the public health, safety and the environment and provides for the efficient mining of the salt reserves. This requires the accurate monitoring of individual cavern operational parameters; including injection volume fluid and rate, withdrawal fluid volume and rate and wellhead pressure.

The following regulatory monitoring and reporting requirements became effective August 6, 2010.

K.A.R. 28-46-30a (b) requires each permittee to submit monthly the following records to KDHE on a form approved by KDHE:

- 1) The weekly injection and withdrawal volume for each salt solution mining well or gallery.
- 2) A summary of the weekly injection and withdrawal ratio for each salt solution mining well or gallery.
- 3) A summary of the weekly minimum and maximum injection pressures for each salt solution mining well or gallery.

K.A.R. 28-46-30a (k) requires each permittee to give oral notification to KDHE of a verified exceedance of the maximum permitted injection pressure within 24 hours of discovery of the exceedance and to submit written notification with seven calendar days to KDHE.

K.A.R. 28-46-30a (l) requires each new well (a well constructed on or after August 6, 2010) to have a meter to measure injection or withdrawal volume. The permittee shall maintain records of these flow volumes at the facility and shall make the records available to KDHE upon request.

Plan Requirements:

KDHE believes the plan that must be submitted to KDHE on or before August 6, 2012 should include enhancements to the monitoring systems for the solution mining operation parameters. KDHE believes enhancements would include:

1. Monitoring of each individual well in a gallery using an electronic continuous monitoring and recording system to monitor and record injection volume and withdrawal volume, injection flow rate and withdrawal flow rate, and wellhead pressures. Electronic monitoring/recording systems have the

ability to trend and graph data, provide electronic data storage and alarm capabilities for exceedance of parameter limits such as injection pressure.

2. The parameters monitored must be recorded at an interval that provides sufficient data to accomplish the stable cavern development and efficient mining of the salt reserves. The recorder must be able to collect and record readings at least every 30 seconds.
3. An automatic alarm designed to alert the operator when the maximum injection pressure specified in the UIC permit is exceeded so that corrective action can be taken in a timely manner by the permittee.
4. The monitoring/recorder system must have a battery back-up or alternative power supply to ensure continued collection of data during power failures.
5. The electronic data from the continuous monitoring/recorder system must be stored on multiple sources of data storage media for redundancy. The data must be backed up to a computer server, zip drive, compact disk or other electronic media storage device.
6. Multiple sources of storage data may be necessary to ensure compliance with the 3 year record retention requirement.

The plan must include information on the location, type and description of each pressure transducer and flow meter and a description of the electronic monitoring and recording system.