



Date of Application: _____

Class V Injection Well Permit Application for Emplacement

1. OWNER / OPERATOR			
Owner's Name:		Telephone #:	
Mailing Address:		E-Mail Address:	

If different than above:

Operator's Name:		Telephone #:	
Mailing Address:		E-Mail Address:	

2. FACILITY NAME / CONTACT PERSON			
Facility Name:			
Facility Contact:		Telephone #:	
Job Title:		E-Mail Address:	

3. WELL INFORMATION & COMPLETION			
Attach a well schematic in addition to completing the table below. Attachment name: _____			
GPS Coordinates Latitude / Longitude:		County:	
Located on Indian Lands:	Yes No	Top Hole Elevation:	

Borehole Size	Casing / Tubing Size	Material

4. LOCAL APPROVALS

Provide documentation all required local approvals have been obtained: N/A

Attachment name: _____

5. EXISTING PERMITS

Indicate any permits or construction approvals received or applied for by the facility which are required under any of the following programs; note any changes to an existing permit and attach as appropriate:

1. Hazardous Waste Management program under the Resource Conservation Recovery Act (RCRA)
2. Underground Injection Control program under the Safe Drinking Water Act
3. Underground Hydrocarbon Storage program under Kansas Statutes Annotated 55-1,117 through 55-1,119
4. National Pollutant Discharge Elimination System program under the Clean Water Act
5. Prevention of Significant Deterioration (PSD) program under the Clean Air Act
6. Nonattainment program under the Clean Air Act
7. National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the Clean Air Act
8. Dredge and fill permits under section 404 of Clean Water Act
9. Other relevant environmental permits, including State permits

Attachment name(s):

6. PURPOSE OF INJECTION

Describe in the text box below the purpose of this injection well in detail.

7. MATERIAL DESCRIPTION

Describe in the text box below all material to be injected, including physical, chemical, bacteriological and radiological properties, and toxicity. Provide analyses for each injection stream including analyses for all constituents. Submit a Safety Data Sheet (SDS) for any additives used. All analyses shall be conducted by a laboratory certified by the State of Kansas. Additional testing of the injection stream may be required after review of the application and pertinent information.

Add additional attachments if necessary; attachment name: _____

8. SOURCE OF MATERIAL

Describe in the text box below the sources, including individual processes, generating the various material streams that are proposed to be injected. Submit a block flow diagram depicting the relationship of the source to the proposed injection well. Include all sources and estimated quantities of material produced by each source.

Add additional attachments if necessary; attachment name: _____

9. INJECTION ZONE

Formation(s) Name:	Estimated Depth to Top*	Estimated Depth to Base*
Injection Interval:		
Openhole: _____ to _____ ; _____ to _____ ; _____ to _____ ;		

*Provide reference points for these values: _____

10. MATERIAL INJECTION RATE

Injection material is to be injected at a minimum rate of _____ gallons per day (gpd) to a maximum rate of _____ gpd. Provide a demonstration that the maximum injection rate is feasible.

11. MATERIAL INJECTION PRESSURE

Injection will be by means of gravity pressure (no pump pressure allowed) or _____ inches vacuum.

12. INJECTION PROCEDURE

Describe in the text box below the proposed injection procedure for the well. Submit a block flow diagram.

Attachment name: _____

13. SURFACE FACILITIES

Describe in the text box below and submit design information and diagrams for all surface retention facilities, holding tanks, lines, transfer pumps, and filters associated with the injection operation.

Add additional attachments if necessary; attachment name: _____

14. MONITORING REQUIREMENTS

Describe in the text box below how monitoring requirements for the injection operation will be met. Electronic continuous recording devices and gauge or meters are required to monitor tubing pressure, flow rate, volume, and annulus pressure.

Describe the meters or gauges and continuous recording devices that will be used to measure and record injection volume, injection rate, annulus pressure, and tubing vacuum.

Add additional attachments if necessary; attachment name: _____

15. MONITORING DEVICES

Submit a diagram indicating the location of all monitoring devices. Provide a quality assurance/quality control plan for obtaining reliable monitoring data. This includes method of calibration and frequency of calibration of gauges, meters and continuous recording devices. Submit an injection material analysis plan that describes the procedures and methods to be used to obtain representative samples of the injection material to meet monitoring requirements.

Add additional attachments if necessary; attachment name: _____

16. MATERIAL SAMPLING PROCEDURE

Describe in the text box below where the injection material samples will be collected for monitoring purposes, the method used to collect the samples, sampling containers, sample storage, chain of custody procedures, and the quality assurance/control procedures used. All analyses required by the UIC permit shall be conducted by a laboratory certified by the State of Kansas.

Add additional attachments if necessary; attachment name: _____

17. MECHANICAL INTEGRITY TEST (MIT)

Submit a plan for pressure testing the tubing/casing annulus for mechanical integrity. Procedure #UICV-4, Procedure for the Pressure Mechanical Integrity Test for Evaluating Internal Mechanical Integrity of a Class V Injection Well can be found at: <http://www.kdheks.gov/uic/download/UICV-4.pdf>

Add additional attachments if necessary; attachment name: _____

For questions 18—21, the applicant may reference a previously approved permit application or permit. The applicant must include the date, section, and page number of the reference where applicable.

18. PROVIDE THE FOLLOWING DISCUSSION, MAPS, AND/OR ATTACHMENTS (A—N):

A. Describe in the text box below and submit supporting information demonstrating that injecting material into the subsurface stratum will not endanger or injure any mineral resource (coal, oil, gas, salt, sand, gravel, others) bearing formations. Submit maps and sources for other supporting information.

Attachment name: _____ ; or Reference: _____

B. Submit a map indicating the boundaries and ownerships of tracts of land adjacent to the applicant’s facility boundaries. Submit a list of the names and mailing addresses of all owners of tracts of land adjacent to the plant boundaries keyed to the map.

Attachment name: _____ ; or Reference: _____

C. Submit a United States Geological Survey (USGS) topographic map indicating the facility boundaries and well location. Include on this map an outline of the 0.25 mile radius area of review. If the cone of influence is greater than the 0.25 mile radius area of review, then the cone of influence area of review applies.

Attachment name: _____ ; or Reference: _____

D. Submit a clear, legible, detailed map with an appropriate scale. The 0.25 mile radius area of review must be drawn on the map. The following, if present within the area of review, must be shown on the map:

- | | |
|---------------------------------------|--------------------------------------|
| 1. the injection well to be permitted | 9. surface water bodies |
| 2. all oil and gas producing wells | 10. springs |
| 3. all inactive wells | 11. mines |
| 4. injection wells | 12. quarries |
| 5. abandoned wells | 13. water wells |
| 6. dry holes | 14. monitoring wells |
| 7. plugged wells | 15. faults |
| 8. core holes | 16. other pertinent surface features |

Attachment name: _____ ; or Reference: _____

E. Submit a tabulation of data for all wells penetrating the injection zone and/or the confining zone within the area of review including the following:

1. current status
2. type
3. construction
4. date of drilling
5. location
6. depth
7. plugging or completion data

Key these wells to the map. Submit copies of plugging records for wells penetrating the injection zone and/or the confining zone if available. Submit a schematic indicating the current configuration of all wells penetrating the injection zone and/or confining zone. Submit proposed corrective measures required for wells in the area of review, if any

Attachment name: _____; or Reference: _____

F. Describe in the text box below the protocol used to identify, locate, and ascertain the condition of all wells within the area of review. At a minimum the records of the following shall be reviewed:

1. Kansas Department of Health and Environment
2. Kansas Geological Society
3. Kansas Geological Survey
4. Kansas Corporation Commission

Submit documentation that these sources were checked. Appropriately scaled aerial photos of the area of review shall also be examined for any indication of wells and the results reported. Submit copies of the aerial photos examined. In addition, the location of each abandoned well penetrating the injection zone shall be physically inspected; submit the results of this documented inspection.

Attachment name: _____; or Reference: _____

G. Submit surface geologic maps, cross sections, and structural contour maps illustrating the regional geologic setting.

Attachment name: _____ ; or Reference: _____

H. Submit two cross-sections perpendicular to each other crossing at the proposed injection well location. These cross-sections shall include, at a minimum, available wire-line logs, geologic units, and lithology from the surface to the base of the injection zone. The lines of the cross-sections should be shown on all structure maps. The cross-sections should contain the well numbers from the area of review map for reference.

Attachment name: _____ ; or Reference: _____

I. Submit maps and cross-sections indicating the general vertical and lateral limits of all aquifers containing less than 10,000 mg/l total dissolved solids within the area of review, their position relative to the zone of injection, and the direction of water movement if known. (i.e. groundwater flow map) All maps should include the area of review.

Attachment name: _____ ; or Reference: _____

J. Describe in the text box below the nature and areal development of upper and lower confining strata (lithology permeability, etc.).

K. Describe in the text box below the depositional and structural history of the area including lithology and hydrologic properties of all units penetrated by the proposed well.

L. Submit the following maps for the area using available well control:

1. Structural contour map of the injection zone
2. Isopach map of the injection zone
3. Structural contour map of the confining zone
4. Isopach map of confining zone

Attachment name: _____ ; or Reference: _____

M. Submit a piezometric surface map of the injection zone or, if insufficient data is available, provide the expected static fluid level and regional gradient. Reference sources of this information and include the area of review on the map.

Attachment name: _____ ; or Reference: _____

N. Submit the predicted fracture pressure of injection interval. Submit the calculations and methodology used to determine the fracture pressure, include the reference for the sources of values used. One example of an acceptable equation for calculating the predicted fracture pressure is the Eaton Equation, as follows:

$$F = \left(\frac{S - P}{D} \right) \left(\frac{v}{1 - v} \right) + \frac{P}{D}$$

P = wellbore pressure (psi)
D = depth (ft)
S = overburden stress (psi)
v = Poisson's ratio
F = fracture gradient (psi/ft)

Attachment name: _____ ; or Reference: _____

19. CORROSION TEST INFORMATION

Submit a report on the results of a corrosion test on all injection well components and appurtenances which will be in contact with the injection material. All material must be compatible with the injection fluid which the material may be expected to come into contact. The material shall be deemed to have compatibility as long as the material meets or exceeds standards developed for such material by the American Petroleum Institute (API), the American Society for Testing Materials or comparable standards. Submit a description of the methodology and procedures used to conduct the test and to make the compatibility determination. Include the manufacturer's test date for the injection tubing.

Attachment name: _____ ; or Reference: _____

20. MAXIMUM BURST PRESSURE

Submit a report on the maximum burst pressure, collapse pressure, and tensile stress which may be experienced, including calculations, methodology, and references. Include calculations, formulas, equations, and methodology used to determine that the casing, cementing, tubing, and packer are designed to tolerate the pressures or forces anticipated to be encountered or exerted on the well during construction, completion, and operation. Include design factors used and provide references. If there is the potential for significant variance in the temperature of the injection fluid, provide information demonstrating this has been accounted for in the injection tubing and packer design.

The casing burst pressure, casing collapse pressure, and the casing tension shall be calculated using performance properties listed in API Bulletin 5C2. Well casing shall meet the specifications set out in the API Specification 5CT. Submit service company recommendations along with studies to determine the suitability of the selected cements. Describe the type, grade, additives, slurry weight, and expected compressive strength of the cement. Describe the cementing techniques and equipment including guide shoe, float collar, plugs, baskets, DV tools, and their location. Describe the number and location of the centralizers, wall scratchers, etc. Describe in detail the procedures to be used to ensure satisfactory cementing of the various casings and the remedial action to be taken if primary cementing results are not satisfactory.

Attachment name: _____ ; or Reference: _____

21. SPILL PREVENTION

Describe in the text box below a detailed spill prevention and containment plan for the injection operation. Submit design plans for any spill containment structure(s).

Attachment name: _____ ; or Reference: _____

22. ENVIRONMENTAL REMEDIATION ACTION

Should fresh or usable water or the soils become contaminated by a failure of the injection facilities, the permittee is responsible for investigating the contamination and any required remediation of the contamination. The permittee will be required to sign an agreement with KDHE which will establish guidelines and objectives for investigation and remediation of the contamination.

I acknowledge and agree with this requirement.

23. SAMPLING

Describe in the text box below a plan for obtaining a representative sample of the injection interval material. The sample shall be analyzed for minerals, heavy metals, VOCs, and pH.

24. PLUGGING

Provide a plugging plan for the Class V well utilizing UICV-P08: UIC Class V Procedure for Plugging and Abandonment. Attach a cost estimate for the plugging procedure plan.

Attachment name: _____



In conformity with the provisions of K.S.A 65-171d, the undersigned, representing:

(name of company, corporation, partnership, person, government, or public agency applying)

hereby makes application to the Kansas Department of Health and Environment (KDHE) for a Class V Underground Injection Control (UIC) permit to emplace the materials stated in item #8 of this application.

I certify that the above information is accurate to the best of my knowledge.

X _____
(employee's e-signature)

(date)