

MINUTES OF THE Senate COMMITTEE ON Energy and Natural Resources

The meeting was called to order by Senator Merrill Werts at
Chairperson

8:06 a.m./~~p.m.~~ on January 15, 1985 in room 123-S of the Capitol.

All members were present except:

Committee staff present:

Ramon Powers, Research Department
Nancy Jones, Secretary to the Committee
Don Hayward, Revisor of Statutes
Raney Gilliland, Research Department

Conferees appearing before the committee:

Barbara Sabol, Secretary of Department of Health and Environment

Chairman Werts called the meeting to order and welcomed the Committee members. The staff was introduced for the benefit of new committee members.

Chairman Werts explained that committee meetings have been started immediately in order that the Committee might get a head start on the issues which will be before the Committee this year. Joint meetings will be held next week and part of the following week with the House Energy Committee for an intensive review of the Kansas Water Plan.

Secretary Barbara Sabol was introduced and gave a review of the recommendations of the Hazardous Waste Injection Well Task Force (Attachment A). She asked that the committee note who members of the Task Force as well as conferees attending the Workshop in Wichita, Kansas on July 25 were when their topics of discussion were presented. She then reviewed the recommendations of general policies elaborating on the following sections as adopted by her:

1. Permitting
2. Pretreatment
3. External Review
4. Application Fee

See Attachment A for proposals and recommendations. Secretary Sabol further stated that she would be requesting the Committee to introduce legislation for implementation of these recommendations. The minority statement of the Kansas Natural Resource Council was reviewed with their recommendation being that, as a minimum, these policies be implemented and the proposed policies be viewed as only the first step toward an ultimate goal of banning underground injection of hazardous wastes. Also reviewed was the Statement on the Use of Underground Injection Wells For the Disposal of Hazardous Wastes by the League of Women Voters of Kansas. It is the position of the League that this is an unacceptable procedure and urges the prohibition of new wells and an expeditious phase out of existing wells.

Senator Hayden asked if salt water is categorized as hazardous waste and Secretary Sabol replied it is not in this category. Senator Hayden also inquired if the Arbuckle formation is desirable for disposal of hazardous waste. Secretary Sabol requested that Dennis Murphy of the Kansas Department of Health and Environment respond. He explained that geologically the Arbuckle formation is acceptable for a disposal well site.

Senator Kerr then asked what would be seen if the new regulations were adopted and Secretary Sabol explained there would be more control and safety with regard to environment.

CONTINUATION SHEET

MINUTES OF THE Senate COMMITTEE ON Energy and Natural Resources,
room 123-S, Statehouse, at 8:06 a.m.~~p.m.~~ on January 15, 1985

Senator Gordon asked what the cost would be for an injection well and Secretary Sabol said application of one injection well would be from one-half to one million dollars with necessary equipment and meeting the standards. Senator Gordon then inquired if this cost would cause any problems and Secretary Sabol stated there should not be any and there are only five wells permitted now.

Senator Daniels asked if there is to be a review of the five existing wells and what would such a review consist of. Secretary Sabol explained there would be no charge for a review and this would be done jointly by the Waste Management Bureau and the Bureau of Oil Field and Environmental Geology and they would make the determination if standards and regulations were being met, with extensive review given to special permissions and regulatory permissions; also if there were special conditions related to each well specifically.

Senator Martin inquired if the minority groups would be appearing before this committee and Secretary Sabol stated that none have been scheduled to appear at this time.

Chairman Werts inquired when a draft of a bill to implement the Task Force recommendations would be ready and Secretary Sabol responded that it would be ready by Wednesday or Thursday of this week.

The Chairman suggested that members of the Committee review the Water plan that was placed on their floor desks yesterday.

The meeting was adjourned at 8:55 a.m. by the Chairman. The next meeting will be at 8:00 a.m. on January 16, 1985.

Guest List

1-15-85

~~R. Habes~~
Robert Cleburner

KDHE
Med Care Oil & Gas
CWM

Jim Young
Joe Hodges

Celtis Service Oil & Gas

Dennis Murphy

KDHE

Pat Schafer

Budget

Nancy Ingle

Budget

Ed Reinert

As League Women Voters

Randy Burkson

Empire District Electric

Tom d. Jones

EDE Co.

Charles Hamm

R D H E

D. WAYNE ZIMMERMAN

THE ELECTRIC CO'S ASSOC. OF KS.

1-15-85

KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT
Testimony on the Recommendations of the Hazardous
Waste Injection Well Task Force

By
Barbara J. Sabol, Secretary
To
Senate Energy and Natural Resources Committee
January 15, 1985

Mr. Chairman, members of the Committee: I am pleased to be able to discuss with you today the recommendations of the Hazardous Waste Injection Well Task Force as submitted to me shortly after October 2, 1984.

Let me begin by describing some background. On June 7, 1984, I announced the formation of a task force to review deep well injection of hazardous wastes and develop, if necessary, new hazardous waste injection well policies. The formation of the task force was initiated at the request of Governor Carlin, who indicated that he was interested in having a task force study the issue of deep well injection of hazardous wastes as a separate issue from his legislative initiative last year, for a prohibition of land burial of hazardous waste.

In forming the Hazardous Waste Injection Well Task Force, I charged the task force with four duties: (1) to determine the appropriateness of prohibition of liquid hazardous waste injection; (2) to determine if injection to certain geologic formations would be environmentally acceptable; (3) to review existing requirements and develop new criteria, if necessary, by which future applications for hazardous waste injection may be judged; and (4) to develop a document outlining findings of the task force and recommendations on statutory, regulatory, and/or policy changes.

In forming the task force, I invited 13 organizations to designate a representative. All of the invited organizations accepted my invitation. Attached is a list of the members and the organizations they represent. I also appointed Dr. Allan S. Abramson, Director of the Division of Environment for the Department of Health and Environment, to serve as chairperson for the task force. In selecting the organizations to be represented on the task force, I felt it important to have a broad spectrum of representation, including organizations having technical expertise and working knowledge of hazardous waste injection wells, as well as public interest organizations.

I feel the mix of representation provided the basis for a thorough consideration of the issues involved with hazardous waste injection wells.

J. ENR 1/15/85

ATTACHMENT A

I asked the task force to submit its findings to me by early Fall, 1984. Within the timeframe they had, the task force met on five occasions (July 6, July 25, August 3, September 7, and October 2). At their second meeting on July 25, the task force held a technical workshop during which invited experts discussed various aspects of the hazardous waste injection well issue. The information gained during this technical workshop was very helpful to the task force in forming their recommendations. Attached is a list of the conferees, the organizations/agencies they represent and the topic of their presentations.

As mentioned in the task force's transmittal letter to me, they found a complex set of issues involved in discussing hazardous waste injection wells. Many of these issues relate to technical processes, monitoring and pretreatment requirements as well as the public's perception of the destiny of the wastes, once injected into a well.

Because of the complexity of the issues and the short timeframe within which they had to submit their recommendations, the task force pointed out that they decided early in their deliberations to concentrate on making policy recommendations, rather than specific proposals for rewording of existing statutes and regulations. It was felt that the proposals for rewording of the existing statutes and regulations would be a natural and straight forward extension of the policy recommendations once they were made.

The recommendations of the task force are attached along with their letter of transmittal (Attachment No. 3). Accompanying their recommendations are two qualifying minority statements from the Kansas Natural Resource Council and the League of Women Voters of Kansas.

Upon receiving the task force's recommendations, my personal review was supplemented by that of a KDHE staff review committee. Assimilating the staff review committee's comments with my review, led to my adoption of the task force's recommendations, with minor modifications. The adopted version of their recommendations is also attached (Attachment No. 4). In adopting the recommendations of the task force, I identified whether I felt the individual recommendations should be implemented through modification of the statutes or regulations. There were five recommendations I felt lended themselves well for implementation through statutory modification.

Let me take a moment to highlight these recommendations. The first recommendation of the task force states that, "A hazardous waste injection well may be permitted only if it is deemed the most reasonable method after consideration of all other options. Factors to be considered in determining the most reasonable method may include, but are not limited to, health and environmental effects, alternate treatment and disposal technologies, potential for reuse, and economic impacts." It is this policy recommendation that seems to set the stage for all the others, in that it does not recommend a total prohibition of the use of injection wells for hazardous waste disposal, but clearly states that such technology should only be allowed after all other options have been considered, and then outlines the factors that may be considered in determining the most reasonable method.

The second recommendation of the task force identifies that prior to injection, the fluids must meet minimum pretreatment requirements that are set by the Secretary. The basis for my adoption of this recommendation, and I am sure the basis by which the task force recommended it, is to provide a margin of safety for a disposal technology which places the waste in a location which would make it very difficult to retrieve or reverse the process should something go wrong. The implications of permanence associated with this disposal option are more prominent than with other disposal options.

The task force stated that one of the reasons for making this recommendation is to encourage adoption of alternatives to the injection of hazardous waste.

In addition, I would like to point out that they have recommended values that must be considered in setting the pretreatment requirements, including a provision to allow consideration of other values that would be necessary to prevent contamination of underground drinking water supplies, to protect the public health, and to take into account environmental and compatibility considerations.

The fourth recommendation of the task force proposed the establishment of a hazardous waste injection well review board to recommend approval, denial or conditions for approval of all hazardous waste injection well applications. They identified the type of expertise that should be represented on the board, that they should be compensated for their work and that the review board may be used for review of applications for other types of hazardous waste disposal facilities.

I did not adopt this recommendation because I did not feel it was necessary to establish such a review board, as the type of expertise and review being recommended is an existing function of the KDHE staff and would therefore be duplicative of the KDHE staff function as well as the purpose of the hearing process for Class I UIC application for a permit. Rather than adopting this recommendation, I have proposed that provision be made for appropriation of funds for contracting with outside consultants to provide additional technical expertise if needed for hazardous waste injection well permit application review or for the review of other types of hazardous waste disposal facilities on a case-by-case basis. Specific instances may arise when additional expertise may be useful. The Secretary of the Department of Health and Environment currently has the authority to utilize outside consultants for additional expertise, as provided in K.S.A. 65-171c and 65-3431g.

The task force proposed in their recommendation number eight, the establishment of an initial application fee of \$25,000, and in the case of an already permitted facility submitting an application for the construction and operation of an additional well on the permitted site, the permit fee would not exceed \$10,000. I have adopted this recommendation as a means of defraying the estimated average costs to the department in staff time and expenses for review of a hazardous waste injection well application under the two circumstances of: a new well; and an additional well at an already existing facility.

The last task force recommendation I wanted to highlight concerns the establishment of monitoring fees. As I have adopted the task force's recommendation, an annual monitoring fee would be increased from a quantity not to exceed \$10,000 annually to a quantity not to exceed \$25,000 annually. As indicated in the recommendation, the higher amount is intended to provide for on-site witnessing of injection well operations, if determined appropriate by the Secretary. The actual amount of the fee is also proposed to be determined by the Secretary. The basis for determination of the actual amount of the fee would be based on the estimated costs for defraying the costs to the department for providing oversight of the injection well operations. I not only feel it is important to provide the opportunity for on-site witnessing but also provide for the funding to provide this service.

Having highlighted these five task force recommendations, I refer you to the attached adopted version of their recommendations for consideration of the remaining 12 recommendations that seemed to more appropriately be considered for implementation through modification of the regulations. The statutory modifications necessary to implement these recommendations will be submitted to you for your consideration and enactment.

In its report to the Legislative Coordinating Council the Special Committee on Energy and Natural Resources commended the Hazardous Waste Injection Well Task Force for its efforts in reviewing the issue of deep well injection. The task force did an outstanding job and the department is also very appreciative of their efforts.

Thank you very much for the opportunity to share these important recommendations with you.

MEMBERS OF THE HAZARDOUS WASTE INJECTION
WELL TASK FORCE

- Allan S. Abramson, Chairperson.....Director of the Division of
Environment for KDHE
- Norman W. Biegler.....Association of Engineering
Geologists
- Mary Ann Bradford.....League of Women Voters of Kansas
- Janis Butler.....Kansas Engineering Society
- David C. Clark.....Kansas Water Pollution Control
Association
- James W. Collins.....Mid-Continent Oil and Gas
Association
- Michael Everhart.....Environmental Section of the
Kansas Public Health Association
- Rob Hodges.....Kansas Chamber of Commerce and
Industry
- Manoutchehr Heidari.....Geohydrology Section of the Kansas
Geological Survey
- Ross Martin.....Kansas Petroleum Council
- Jack McCord.....Conservation Division of the
Kansas Corporation Commission
- E.A. Mosher.....League of Kansas Municipalities
- Mari Peterson.....Kansas Natural Resource Council
- Donald P. Schnacke.....Kansas Independent Oil and Gas
Association

Attachment No. 2

Conferees at the July 25, Hazardous Waste
Injection Well Task Force Technical Workshop
Held in Wichita, Kansas and Their Topics of Discussion (In the order
they appeared during the workshop)

Suzie Ruhl	Legal Environmental Assistance Foundation, Tallahassee, Florida.....Topic: Federal and State Policies Regarding Hazardous Waste Injection Wells
Richard Tinlin	Engineering Enterprises, Inc., Norman, Oklahoma.....Topic: The Meaning of the Term, "Area of Endangering Influence"
Ernest Angino	Chairman, Department of Geology, the University of Kansas, Lawrence, Kansas.....Topic: Hazardous Waste Disposal Alternatives
Ross Brower	Illinois Geological Survey, Champaign, Illinois.....Topic: The Illinois Experience with Hazardous Waste Injection Wells
Jim Boyd	Plant Manager, Vulcan Materials Company, Wichita, KansasTopic: Vulcan's Experience with Deep Well Injection
Robert Selm	Wilson and Company, Salina, Kansas.....Topic: Injection Well Design and Liquid Pretreatment
Doyle Fair	Consulting Engineer, Wichita, Kansas.....Topic: Construction and Monitoring of Injection Wells
Jerry Carr	U.S. Geological Survey, Lawrence, Kansas.....Topic: The Arbuckle Formation
Howard O'Connor	Kansas Geological Survey, Lawrence, Kansas.....Topic: Siting Criteria

KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

MEMORANDUM

TO: Barbara J. Sabol, Secretary
Kansas Department of Health and Environment

FROM: Members of The Hazardous Waste Injection Well Task Force

DATE: October 2, 1984

SUBJECT: Final Recommendations

The Task Force convened four times between July 6, 1984 and September 7, 1984 and discussed the issue of hazardous waste injection wells within the scope of the following responsibilities:

(1) To determine the appropriateness of prohibition of liquid hazardous waste injection, (2) To determine if injection to certain geological formations would be environmentally acceptable, (3) To review existing requirements and develop new criteria, if necessary, by which future applications for hazardous waste injection may be judged, and (4) To develop a document outlining findings of the Task Force and recommendations on statutory/regulatory changes and policy.

The Task Force held a workshop on July 25 in Wichita where conferees expressed pros and cons on the hazardous waste injection well issue which were helpful to the task force in forming the recommendations included in the report.

The Task Force found that a complex set of issues are involved in discussing hazardous waste injection wells and their viability as a disposal method. Many of these issues related to physio-chemical processes that involve the waste characteristics, formation properties, and pretreatment opportunities and the public perception of the future destiny of the wastes, once injected into a well.

We hereby submit our recommendations to you for your consideration.

Hazardous Waste Injection Well Task Force Members

Allan S. Abramson

Allan S. Abramson, Chairman
Hazardous Waste Injection Well Task Force

Norman W. Biegler

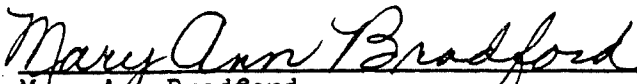
Norman W. Biegler
Association of Engineering Geologists

M. Heidari

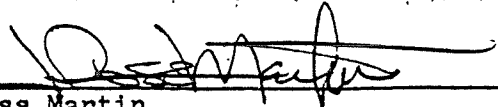
Dr. Manoutchehr Heidari, Chief
Geohydrology Section
Kansas Geological Survey

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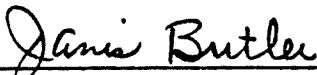
Hazardous Waste Injection Well Task Force Members (Cont.)



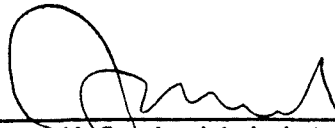
Mary Ann Bradford
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Ross Martin
Kansas Petroleum Council



Janis Butler
Kansas Engineering Society



Jack McCord, Administrator
Conservation Division
Kansas Corporation Commission



David C. Clark
Kansas Water Pollution Control Assoc.



E. A. Mosher, Executive Director
League of Kansas Municipalities



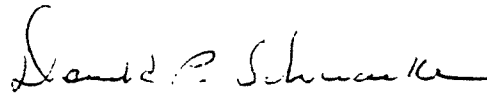
James W. Collins
Mid-Continent Oil & Gas Association



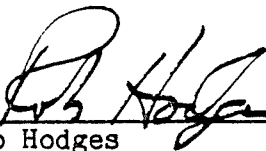
Mari Peterson, Executive Director
Kansas Natural Resource Council



Michael Everhart, Chairman
Environmental Section
Kansas Public Health Association



Donald P. Schnacke
Kansas Independent Oil & Gas Assoc.



Rob Hodges
Kansas Chamber of Commerce
and Industry

NOTE: The signing of this document by individual task force members indicates that the task force member, as an individual, acknowledges participation with the task force. Their individual signatures do not necessarily signify endorsement of this document by the organization they represent.

KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

HAZARDOUS WASTE INJECTION WELL TASK FORCE

RECOMMENDATIONS

General Policies

1. Permitting: A hazardous waste injection well should be permitted only if it is deemed the most reasonable method after consideration of all other options. Factors to be considered in determining the most reasonable method may include, but are not limited to, health and environmental effects, alternate treatment and disposal technologies, potential for reuse, and economic impacts.
2. Pretreatment: Prior to injection, the fluids must meet minimum pretreatment requirements that are set by the Secretary. The purposes of the pretreatment requirements include protecting public health and the environment if the injection well fluids were to inadvertently enter useable aquifers or surface waters, and encouraging adoption of alternatives to the injection of hazardous waste. In addition, pretreatment should render the injected fluid compatible with the well string and with the disposal formation.

In setting these requirements, the Secretary shall consider values 100 times applicable drinking water standards and values 100 times applicable 10^{-5} cancer risk levels, or other values necessary to prevent contamination of underground drinking water supplies, to protect the public health, and to take into account environmental and compatibility considerations.

3. Pressure Injection: All systems other than zero or negative well head pressure injection of hazardous wastes should be prohibited in the State of Kansas.
4. External Review: A hazardous waste injection well review board should be established in order to recommend approval, denial or conditions for approval of all hazardous waste injection well applications.

The review board should consist of up to 7 members. The review board should have expertise represented in the following areas: geology, hydrology, chemistry, toxicology, process engineering and well construction engineering. The members of the review board may be compensated for their work in reviewing applications. The deliberations of the review board should be open to the public.

It also is recommended that this review board may be used by the Secretary, for review of applications for other types of hazardous waste disposal facilities.

Application Requirements

5. Necessary Information: The applicant should be responsible for providing the information necessary for the Secretary to determine that well injection of the hazardous waste in question is the most reasonable method after consideration of all other options.
6. Area of Review: The area of review for all hazardous waste injection wells should be one-half ($\frac{1}{2}$) mile or shall extend to the limits of the estimated zone of endangering influence, whichever is greater. The estimated zone of endangering influence shall be defined as that area where the cone of "impression" intercepts the boundaries of a useable aquifer.
7. Field Verification: The location of all holes and abandoned wells within the area of review should be ascertained by means of a record search and a field survey, including interviews. The results of the survey should be documented in a report, with a portion of the report including a map to geographically document the location of all holes and abandoned wells within the area of review.
8. Application Fee: In order to defray the costs to the Department for initial review of an application for a hazardous waste injection well facility, the applicant should submit an application fee of \$25,000 with the permit application. In cases of a permitted facility submitting an application for the construction and operation of a new well on the permitted site, the permit fee shall not exceed \$10,000.

Permit Conditions

9. Liability Coverage: Insurance requirements should be modified to require not less than \$1,000,000 per person and \$1,000,000 per occurrence for bodily injury or death and \$3,000,000 for all damages to the property of others. Minimum amount of coverage should be \$3,000,000.

In lieu of insurance, a financial equivalency requirement which is consistent with the federal requirement (40 CFR 264.147(f)) may be allowed. Higher amounts for insurance, bonds or equivalent may be required by the Secretary.

10. Long-term Assurances: Closure and post-closure requirements will be met by compliance with the federal regulations (40 CFR 264.111 through 40 CFR 264.120) as effective September 1, 1984.

Financial requirements will be met by compliance with the federal regulations (40 CFR 264.141 through 40 CFR 264.151) as effective September 1, 1984.

11. Monitoring:

- a. Injection fluids received from multiple generators by a hazardous waste facility, even if treated at the hazardous waste facility before injection, should be batched tested and the chemical composition confirmed by laboratory analyses prior to injection. However, laboratory analysis of the composition of homogeneous and continuously generated injection fluids generated and disposed at a single site may be permitted on a monthly basis. The results of such laboratory analyses should be the basis upon which the Secretary will determine whether injection of the fluids may occur.

Monitoring should be required only for constituents which were approved for injection. The Secretary may allow for monitoring of indicator constituents rather than the full approved list of constituents, and for other constituents as deemed necessary.

- b. Monitoring wells should be required in appropriate geologic zones as determined by the Secretary to be necessary to protect useable aquifers.
 - c. Records of the continuously monitored injection pressure, flow rate, injection volume and annular pressure should be maintained, in addition to the weekly average, maximum and minimum values of these parameters.
 - d. Monitoring results should be reported to the Department on a monthly basis.
12. Permit Review Term: The Secretary should review each permit for a class I hazardous waste injection well at least every year, to determine whether it should be modified, revoked or reissued.
 13. Permit Renewal Fee: In order to defray the costs to the Department for renewal of a class I hazardous waste injection well permit, as identified in 28-46-10-a, the applicant should submit a permit renewal fee not to exceed \$10,000, the amount of which will be determined by the Secretary.

On-going Oversight

14. Monitoring Fees: In order to defray the costs to the Department of monitoring a hazardous waste injection well, the fee schedule should be increased from a quantity of not to exceed \$10,000 annually to a quantity of not to exceed \$25,000 annually. The higher amount is intended to provide for on-site witnessing of injection well operations, if determined appropriate by the Secretary. The amount of the fee will be determined by the Secretary.

15. Integrity Tests: The mechanical integrity of hazardous waste injection wells should have to be demonstrated by the permittee every two years. The Secretary shall provide for a qualified state inspector to witness all mechanical integrity tests performed.
16. Inspections: As a minimum, the Secretary should direct that a monthly, unannounced site inspection be conducted in order to ensure full compliance with permit requirements.
17. Task Force: The Hazardous Waste Injection Well Task Force should be reconvened annually to evaluate program policies and implementation, and to provide its recommendations to the Secretary.

Kansas Natural Resource Council

HAZARDOUS WASTE INJECTION WELL TASK FORCE

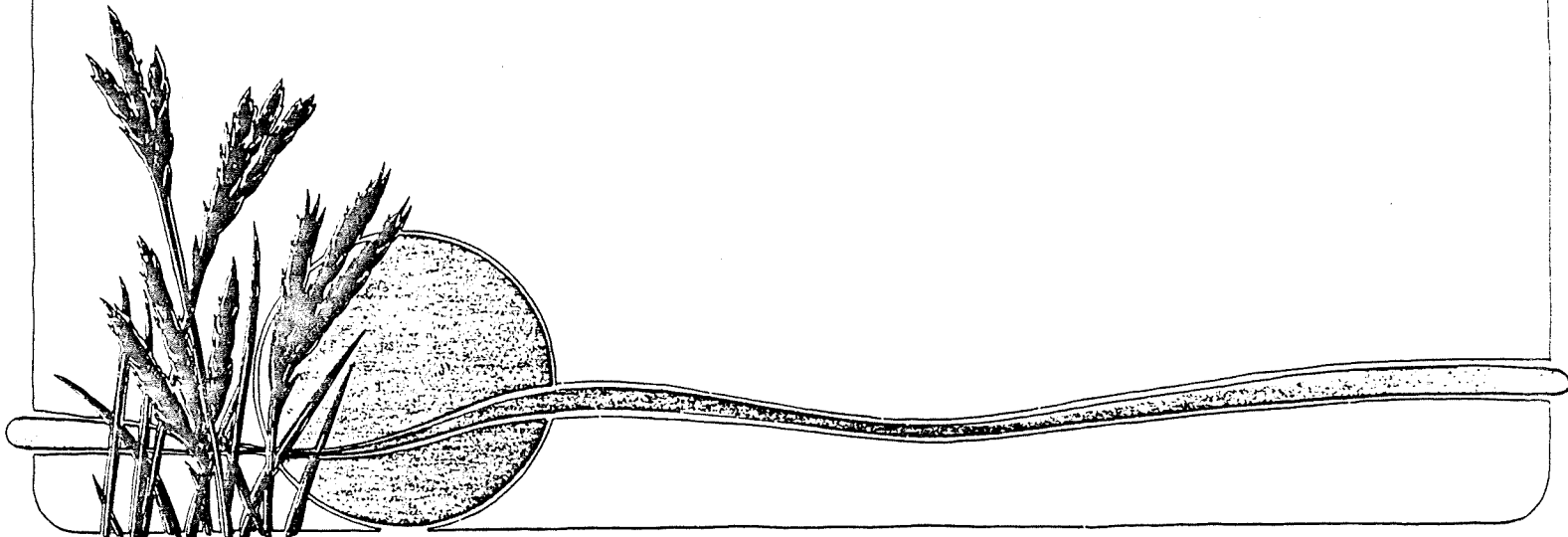
Minority Statement

We recognize that the policies recommended by the Hazardous Waste Injection Well Task Force represent a significant improvement over current policies, and we recommend, at a minimum, that these policies be implemented.

We still hold serious reservations about the ability to contain hazardous chemicals underground and to monitor their containment. We also believe it is the responsibility of the state and the Department of Health and Environment to address the source of environmental problems, not merely their symptoms.

We recognize the interest and concern of the Kansas Legislature in reducing hazardous waste generation and enhancing hazardous waste treatment. We do not intend for these policy recommendations to preclude the legislature from taking stronger action in this area.

Therefore, we recommend that these proposed policies be viewed as only the first step toward an ultimate goal of banning underground injection of hazardous wastes.



LWVK LEAGUE OF WOMEN VOTERS OF KANSAS

909 Topeka Avenue-Annex

Topeka, Kansas 66612

(913) 354-7478

STATEMENT ON THE USE OF UNDERGROUND INJECTION WELLS FOR THE DISPOSAL OF HAZARDOUS WASTES

During 1982, the members of the League of Women Voters of Kansas studied and discussed the many aspects of hazardous waste management in general and also focused on the situation in Kansas. Member agreement on waste generation, transportation, facility siting and management options was reached through a consensus process and serves as the basis of the League's position on hazardous waste management in Kansas.

It is the League's position that the use of underground injection wells for disposal of hazardous wastes is an unacceptable procedure. Consequently, the League urges the prohibition of new wells and an expeditious phase out of existing wells.

Should a prohibition on the disposal of hazardous wastes by underground injection wells not occur, the League would support the recommendations of the Task Force as they could provide for a better defined and more stringent program for hazardous waste disposal by underground injection wells.

September 7, 1984

KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT
HAZARDOUS WASTE INJECTION WELL TASK FORCE

RECOMMENDATIONS

(as adopted by Secretary Sabol)

General Policies

- may*
- Statute 1. Permitting: A hazardous waste injection well ~~should~~ be permitted only if it is deemed the most reasonable method after consideration of all other options. Factors to be considered in determining the most reasonable method may include, but are not limited to, health and environmental effects, alternate treatment and disposal technologies, potential for reuse, and economic impacts.
- Proposed incorporation into K.S.A. 65-3439 as item "c"
- Statute 2. Pretreatment: Prior to injection, the fluids must meet minimum pretreatment requirements that are set by the Secretary. The purposes of the pretreatment requirements include protecting public health and the environment if the injection well fluids were to inadvertently enter useable aquifers or surface waters, and encouraging adoption of alternatives to the injection of hazardous waste. In addition, pretreatment should render the injected fluid compatible with the ~~well string~~ and with the disposal formation.
injection tubing
- In setting these requirements, the Secretary shall consider values 100 times applicable drinking water standards and values 100 times applicable 10^{-5} cancer risk levels, or other values necessary to prevent contamination of underground drinking water supplies, to protect the public health, and to take into account environmental and compatibility considerations.
- Regulation 3. Pressure Injection: All systems other than zero or negative well head pressure injection of hazardous wastes should be prohibited in the State of Kansas.
- Statute (budget) 4. ~~External Review:--A hazardous waste injection well review board should be established in order to recommend approval, denial or conditions for approval of all hazardous waste injection well applications.~~
- ~~The review board should consist of up to 7 members.--The review board should have expertise represented in the following areas: geology, hydrology, chemistry, toxicology, process engineering and well construction engineering.--The members of the review board may be compensated for their work in reviewing applications.--The deliberations of the review board should be open to the public.~~
- ~~It also is recommended that this review board may be used by the Secretary, for review of applications for other types of hazardous waste disposal facilities.~~
- The Legislature should appropriate funds for contracting with outside consultants to provide additional technical expertise if needed for hazardous waste injection well permit applications reviews or for the review of other types of hazardous waste disposal facilities on a case-by-case basis.*

Application Requirements

Regulation 5. Necessary Information: The applicant should be responsible for providing the information necessary for the Secretary to determine that well injection of the hazardous waste in question is the most reasonable method after consideration of all other options.

Regulation 6. Area of Review: ^{shall no less than} The area of review for all hazardous waste injection wells ~~should be~~ one-half (1/2) mile or shall extend to the limits of the estimated zone of endangering influence, whichever is greater. The estimated zone of endangering influence shall be defined as that area where the cone of "impression" intercepts the boundaries of a useable aquifer.

Regulation 7. Field Verification: The location of all holes and abandoned wells within the area of review should be ascertained by means of a record search and a field survey, including interviews. The results of the survey should be documented in a report, with a portion of the report including a map to geographically document the location of all holes and abandoned wells within the area of review.

Statute 8. Application Fee: In order to defray the costs to the Department for initial review of an application for a hazardous waste injection well facility, the applicant should submit an application fee of \$25,000 with the permit application. In cases of a permitted facility submitting an application for the construction and operation of a new well on the permitted site, the permit fee shall not exceed \$10,000.

This recommendation and recommendation No. 13 are proposed for incorporation into K.S.A. 65-171(f)(5)

^{an additional}
Permit Conditions

Regulation 9. Liability Coverage: Insurance requirements should be modified to require not less than \$1,000,000 per person and \$1,000,000 per occurrence for bodily injury or death and \$3,000,000 for all damages to the property of others. Minimum amount of coverage should be \$3,000,000.

In lieu of insurance, a financial equivalency requirement which is consistent with the federal requirement (40 CFR 264.147(f)) may be allowed. Higher amounts for insurance, bonds or equivalent may be required by the Secretary.

Regulation 10. Long-term Assurances: Closure and post-closure requirements will be met by compliance with the federal regulations (40 CFR 264.111 through 40 CFR 264.120) as effective September 1, 1984.

Financial requirements will be met by compliance with the federal regulations (40 CFR 264.141 through 40 CFR 264.151) as effective September 1, 1984.

Regulation 11. Monitoring:

- a. Injection fluids received from multiple generators by a hazardous waste facility, even if treated at the hazardous waste facility before injection, should be batched tested and the chemical composition confirmed by laboratory analyses prior to injection. However, laboratory analysis of the composition of homogeneous and continuously generated injection fluids generated and disposed at a single site may be permitted on a monthly basis. The results of such laboratory analyses should be the basis upon which the Secretary will determine whether injection of the fluids may occur.

Monitoring should be required only for constituents which were approved for injection. The Secretary may allow for monitoring of indicator constituents rather than the full approved list of constituents, and *may require* for other constituents as deemed necessary.

- b. Monitoring wells should be required in appropriate geologic zones as determined by the Secretary to be necessary to protect useable aquifers.
- c. Records of the continuously monitored injection pressure, flow rate, injection volume and annular pressure should be maintained, in addition to the weekly average, maximum and minimum values of these parameters.
- d. Monitoring results should be reported to the Department on a monthly basis.

Regulation 12. Permit Review Term: The Secretary should review each permit for a class I hazardous waste injection well at least every year, to determine whether it should be modified, revoked or reissued.

Regulation 13. Permit Renewal Fee: In order to defray the costs to the Department for renewal of a class I hazardous waste injection well permit, as identified in 28-46-10-a, the applicant should submit a permit renewal fee not to exceed \$10,000, the amount of which will be determined by the Secretary.

On-going Oversight

Statute 14. Monitoring Fees: In order to defray the costs to the Department of monitoring a hazardous waste injection well, the fee schedule should be increased from a quantity of not to exceed \$10,000 annually to a quantity of not to exceed \$25,000 annually. The higher amount is intended to provide for on-site witnessing of injection well operations, if determined appropriate by the Secretary. The amount of the fee will be determined by the Secretary.

Proposed for
incorporation
into K.S.A. 65-
3431(u)

- Regulation 15. Integrity Tests: The mechanical integrity of hazardous waste injection wells should have to be demonstrated by the permittee every two years. The Secretary shall provide for a ~~qualified state~~ inspector to witness all mechanical integrity tests performed.
- Regulation 16. Inspections: As a minimum, the Secretary should direct that a monthly, unannounced site inspection be conducted in order to ensure full compliance with permit requirements.
17. Task Force: The Hazardous Waste Injection Well Task Force should be reconvened annually to evaluate program policies and implementation, and to provide its recommendations to the Secretary.

**UNDERGROUND INJECTION CONTROL
(UIC) PROGRAM IN KANSAS**

Statutory Authority

The Department has authority under K.S.A. 65-171d to issue permits for injection wells to dispose of industrial waste waters into subsurface formations. Also classed as injection wells are:

- (a) Salt Solution Mining Wells
- (b) Hydrocarbon Storage Wells (LPG)
- (c) Groundwater and Air Conditioning Return Wells
- (d) Recharge Wells

Other Chapter 65 statutes pertaining to water pollution control also apply to the UIC program but not to the permitting of wells.

Primacy of UIC Program

The Governor has designated the Department of Health and Environment as lead agency for all classes of injection wells except those related to the production or enhanced recovery of oil and gas. Lead agency designation for oil and gas field brine disposal and enhanced recovery wells was given to the Kansas Corporation Commission which is operated as a joint KCC-KDHE program effort through Memorandum of Agreement.

Kansas (KDHE) was awarded primacy for UIC Injection Well Classes I, III, IV and V and Class II (hydrocarbon storage wells) in early 1984 from the U.S. Environmental Protection Agency. *late 1983*

Primacy signifies that the state receives the Underground Injection Control grant to administer the program at the state level. The state promises, in terms of a Memorandum of Agreement with EPA (Federal), to adopt and implement regulations controlling underground injection practices which are at least as strict as the Federal UIC regulations. The EPA role in the State-Federal partnership is one of program oversight and evaluation and the State fulfills ongoing program obligation to EPA through an official document called the EPA-State Agreement. Primacy can be withdrawn by EPA for poor state program performance but only after a rather detailed Federal hearing process.

DESCRIPTION OF UIC WELL CLASSES

Class I

Includes disposal wells disposing of industrial waste waters or brine, municipal waste water, and hazardous listed wastes and water withdrawn from groundwater cleanup operations and disposed of by subsurface injection. Kansas has:

Industrial Disposal Wells	57
(a) Non-Hazardous	52
(b) Hazardous	5
Municipal Waste Water	0
Groundwater Cleanup (per se)	0

Class II - Oil Field Injection Wells

(a) Disposal	5,020
(b) Enhanced Recovery	3,081

(Permits issued by KCC in the form of Orders after KDHE approval).

Hydrocarbon Storage Wells	5
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(Liquid storage in salt at standard-temp. and pressure).

Class III - Salt Solution Mining Wells

Kansas has five projects - approximately 80 wells

Salt solution mining wells are those where fresh water is injected into salt through one well and salt brine is returned to the surface either through the same well or an adjacent one.

Class IV - Hazardous Waste Injection

For hazardous waste injection above or into fresh water formations. Well type prohibited in Kansas since 1965.

Class V - Miscellaneous Injection well types include:

Hydrocarbon Storage wells in salt where product is stored under pressure	- 700+
Recharge wells	- less than 10
Heat Pump-Groundwater Return	- under survey
Air Conditioner Return wells	- under survey
Drainage wells	- under survey

Class V is currently under survey and assessment as to pollution potential.