



DOCKET NO. 40-8027

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

June 16, 1972



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Mr. James C. Malaro
Chief, Materials Branch
Directorate of Licensing
U.S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Malaro:

Reference is made to your letter of June 2, 1972 requesting recommendations and comments from the Geological Survey concerning the Kerr-McGee Corporation application for amendment to license No. SUB-1010 to dispose of liquid waste from its uranium hexa-fluoride production plant by deep-well injection.

As stated in your letter of June 2, 1972, Mr. Robert Schneider formerly of this office, reviewed data submitted by the Kerr-McGee Corporation in support of their source material license SUB-1010 Docket 40-8027. Mr. Schneider reviews were given in letters of December 19, 1969 and July 13, 1970.

In the July 13, 1970 letter Mr. Schneider stated: "In summary, the injection of waste fluid of any type would build up the pressure head in the Arbuckle Formation and result in brine moving upward along faults and fractured zones and discharge at or near the land surface. The available geologic and hydrologic data are inadequate to predict the flow paths or the time when radioactive waste solutions might reach the surface. However, it is possible that these waste eventually will discharge in the Arkansas River valley where, in addition to entering the river, they could enter the alluvial aquifers which are sources for domestic water supplies."

A review of the May 10, 1972 data submitted by Kerr-McGee does not reveal any information which would change Schneider's conclusions and summary. The new data does not account for the movement of waste for even one half life time much less the six or more half lives which are necessary to make it innocuous. The new data does not indicate pressure changes that would be expected to occur at points of natural discharge of brines from the Arbuckle or the interconnected overlying aquifers. The new data does not address itself to account for the volume of brine (50,000,000 gallons in the first 5 years) that must be displaced by the injection of the waste.

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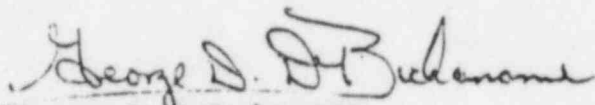
The pre 1972 data indicated that brines of 140,000 ppm total dissolved solids were being discharged at the land surface from fault associated springs under natural hydrostatic pressures. An increase of 200 psi gage pressure in the Arbuckle Formation at the injection well would result in an appreciable increase of flow from such springs. Water of this chemical quality would have a noticeable effect on the environment of the discharge area whether it was on the land surface or beneath a body of surface water.

The complexity of the ground-water system, which is a dynamic system even under natural head conditions, does not lend itself to the design of a method for an emergency recovery of the injected waste. An unexpected detection of any radionuclides any place in the system, which includes everything from the land surface down through the Arbuckle Formation, would result in a situation where it would be impractical or impossible to take remedial action to recover the materials.

We are returning the copy of Kerr-McGee's letter of May 10, 1972 along with its supporting enclosures which represent purported hydrological and geological tests and studies.

If you should have any questions regarding these comments, please let us know.

Sincerely yours,



George D. DeBuchananne
Chief, Office of Radiohydrology
Water Resources Division