UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

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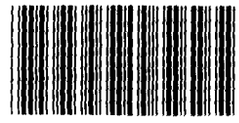
RELEASED

ENERGY AND MINERALS DIVISION

March 23, 1982

B-206791

The Honorable Nancy L. Kassebaum
United States Senate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Dear Senator Kassebaum:

Subject: The Department of Energy Does Not Plan to Use an Abandoned Salt Mine at Lyons, Kansas, for Nuclear High-Level Waste Disposal (EMD-82-64)

On December 3, 1981, you asked that we determine how the Department of Energy (DOE) and the Rickano Corporation intend to use an abandoned salt mine near Lyons, Kansas. Even though the Rickano Corporation bought the mine as a potential low-level nuclear waste 1/ burial site, concerns persist that DOE intends to use it for high-level nuclear waste 2/ disposal. These concerns have apparently continued because of DOE's previous interest in the site for that purpose.

As you may be aware, DOE's current high-level waste disposal program is aimed at opening an underground repository by the end of this century. The sites under consideration are in the States of Washington, Nevada, Texas, Mississippi, Utah, and Louisiana. Based on our many years of tracking and reporting on DOE's high-level nuclear waste isolation program, we are confident that the Lyons, Kansas salt mine is no longer being considered for high-level nuclear waste disposal. In addition, in recent conversations with officials from DOE, the Nuclear

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1/Low-level nuclear waste is generally considered to be any radioactive waste that is not included in any other category of nuclear waste. It ranges from materials suspected of being slightly contaminated with radiation to highly contaminated materials which remain radioactive for long periods of time.

2/High-level waste is either intact fuel assemblies that are discarded after having served their useful life in the nuclear reactor (spent fuel) or the waste products that remain after spent fuel is reprocessed. It is characterized by high-levels of penetrating radiation and must be isolated from the environment for many thousands of years.

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Regulatory Commission (NRC), the Kansas State Government, and the Rickano Corporation, they confirmed that the Lyons mine is not a part of the Federal high-level waste program.

BACKGROUND ON THE LYONS, KANSAS SITE

The Federal Government has long recognized the need to isolate high-level nuclear waste from the environment for many thousands of years. In 1955, the Atomic Energy Commission (Commission), one of the predecessors of DOE, asked an advisory committee of the National Academy of Sciences-National Research Council to identify geological formations in the United States that might be suitable for high-level waste disposal. The Committee subsequently reported that naturally occurring salt formations were possibly the best geological formations for this purpose.

As a result, the Commission began studying the feasibility of disposing of high-level waste in salt. In 1965 the Commission started storing spent fuel elements in an abandoned salt mine near Lyons, Kansas, to examine the effects of radiation and heat on salt. After determining that salt was a suitable storage medium, the experiment was ended and the spent fuel retrieved.

In June 1970 the Commission announced that it would build a Federal high-level waste repository at the Lyons mine if further geologic studies confirmed the site's suitability. The investigations over the next 2 years concluded that there was a possibility of water entry (and potential leakage of radiation) in the Lyons mine from numerous old oil and gas exploration holes and from salt mining operations near the site. Before these issues could be resolved, however, adverse public and political reaction caused the project to be cancelled in 1972.

CURRENT HIGH-LEVEL NUCLEAR WASTE PROGRAM

The administration has embarked on a systematic high-level nuclear waste program aimed at opening the first geologic repository sometime around the end of this century. To meet this schedule, DOE hopes to identify three potential repository sites during 1983 and to begin constructing exploratory shafts at each location to determine their suitability as a permanent disposal facility. Following examination of the three sites in depth, DOE plans to develop one into a test and evaluation facility. This facility will be used to develop and test the technology and procedures needed to emplace large quantities of wastes in geologic formations. The site selected for this purpose, however, may not be the eventual waste repository. Site characterization studies are scheduled to continue on the two remaining sites until about 1988 when a license application for the first repository is scheduled to be submitted to NRC.

This will result, if events proceed as scheduled, in the first operating geologic repository sometime between 1999 and 2006.

Of the three sites to be selected, DOE has tentatively identified two. The first is in a basalt formation on the Hanford Reservation near Richland, Washington. The second is in a type of volcanic rock called "tuffs" at the Nevada nuclear weapons test site. Both of these sites are on Federal lands which are currently dedicated to nuclear activities and are already somewhat contaminated. The third site, which DOE expects to be in a salt formation, has not yet been selected. Sites being considered, however, are three large salt domes in Louisiana and Mississippi and two bedded salt regions in Texas and Utah. According to the Program Manager of DOE's National Waste Terminal Program Office, DOE does not have any on-going high-level waste site characterization studies in Kansas nor have any been scheduled. He was emphatic that any plans of using the Lyons mine for high-level waste disposal have been abandoned.

PROJECTED USES OF THE
LYONS, KANSAS SALT MINE

In 1978, the Rickano Corporation submitted an application to the Kansas State Government requesting a license to operate the abandoned Lyons, Kansas salt mine for low-level nuclear waste disposal. The President of Rickano told us that the 20 miles of tunnels in the abandoned mine are both suitable for low-level waste disposal and cost competitive with shallow land burial--the more conventional low-level waste disposal method.

For various reasons, however, Kansas has not approved the license application. In fact, it is now the State's position that no low-level nuclear waste burial site will be licensed in Kansas unless it is part of a regional compact proposal. In this respect, Kansas, along with eight other states is in the process of forming the "Central Interstate Low-level Radioactive Waste Compact." Once formed, this compact intends to select one or more locations in the nine states for the disposal of commercial low-level radioactive waste generated within the region. Although the Rickano Corporation has submitted the only licensing application in the proposed compact area, the Secretary of the Kansas Department of Health and Environment said that this is no guarantee that the license will be approved. Other companies are also expected to submit applications to operate regional disposal sites and, according to the Secretary, Rickano will have to compete with those and prove that it has the best disposal concept.

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We hope that this satisfactorily answers your concerns about the potential uses of the Lyons, Kansas salt mine. If

we can be of further help, please do not hesitate to let us know.

As arranged with your office, we will not release this report to other interested parties for 5 days unless you publicly announce its contents before that time.

Sincerely yours,

J. Dexter Peach
Director