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New Public Information Resources on Salt Caverns

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New Public Information Resources on Salt Caverns

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Abstract

For the past decade, interest has been growing in using underground salt caverns for disposing of wastes. The Railroad Commission of Texas has permitted a few caverns for disposal of nonhazardous oil field waste (NOW) and one cavern for disposal of naturally occurring radioactive materials (NORM) from oil field activities. Several salt caverns in Canada have also been permitted for disposal of NOW. In addition, oil and gas agencies in Louisiana and New Mexico are developing cavern disposal regulations. The U.S. Department of Energy (DOE) has funded several studies to evaluate the technical feasibility, legality, economic viability, and risk of disposing of NOW and NORM in caverns. The results of these studies have been disseminated to the scientific and regulatory communities. However, as use of caverns for waste disposal increases, more government and industry representatives and members of the public will become aware of this practice and will need adequate information about how disposal caverns operate and the risks they pose. In anticipation of this need, DOE has funded Argonne National Laboratory to develop a salt cavern public outreach program. Key components of this program are an informational brochure designed for nontechnical persons and a website that provides greater detail on cavern operations and allows downloadable access to the reports on the topic funded by DOE. This paper provides an overview of the public outreach program.

Introduction

In the early 1990s, the Railroad Commission of Texas issued permits to several salt cavern operators to accept nonhazardous oil field waste (NOW) for disposal in the caverns. Several Canadian cavern operators are permitted to do the same thing. Examples of NOW are drilling wastes, tank bottoms, soil contaminated by crude oil spills, and produced sands. The Railroad Commission asked the U.S. Department of Energy (DOE) for assistance in examining the technical, legal, and economic issues associated with cavern disposal of NOW. DOE funded Argonne National Laboratory to conduct a series of studies that provide a strong baseline of information on the use of salt caverns for disposal of NOW and other oil field wastes contaminated with naturally occurring radioactive materials (NORM). Examples of oil field NORM wastes include sludges from tanks, scale from the inside of pipes, and soil contaminated by produced water spills or leaks. The studies describe the technical feasibility of the process, its legality and its potential economic viability, and the degree of risk that disposal caverns pose to humans drinking nearby well water (Veil et al. 1996; Tomasko et al. 1997; Veil 1997; and Veil et al. 1998). The full text of these reports is available on an Argonne website [www.ead.anl.gov]. The authors have made numerous presentations of the findings of those studies at technical conferences, with the result that many industry and government officials have now become familiar with the concept of cavern disposal.
Texas has been working on finalizing cavern regulations for about 5 years, while Louisiana and New Mexico are now beginning to develop cavern disposal regulations. It appears that use of caverns represents a viable and growing disposal method for NOW and NORM in areas having both suitable salt deposits and a sufficient supply of NOW or NORM to support a commercial disposal cavern. Although the oil and gas industry and state regulators understand the cavern disposal process, most other potential stakeholders (e.g., the public, politicians, environmental organizations) are not familiar or comfortable with the concept of disposing of wastes in underground salt caverns.

Program for Public Outreach and Education

Several years ago, four research organizations interested in salt caverns (Argonne National Laboratory, Sandia National Laboratories, Solution Mining Research Institute, and the Texas Bureau of Economic Geology) formed the Salt Cavern Research Partnership to coordinate their research efforts. Subsequently, the Partnership established an Advisory Committee with representatives from federal and state government and industry to provide direction on the most important salt cavern research and information needs for the future. In April 1998, the Advisory Committee discussed numerous project ideas and concluded that one of the most pressing needs was a program for public outreach and education. Later that year, Argonne received funding from DOE to develop a brochure and a website on the Internet to provide information to all interested parties about salt caverns and their use for disposing of oil field wastes. Both the brochure and the website are expected to be completed in final form in September 1999.

The Brochure

The intent of the brochure, *An Introduction to Salt Caverns & Their Use for Disposal of Oil Field Wastes*, is to provide solid background information about salt caverns in an easy-to-understand format for persons without a technical background. The brochure contains 14 pages of information in a graphically attractive format that includes numerous photographs of salt cavern operations. The brochure has sections answering the following questions:

- What Are Salt Caverns?
- Where Are Salt Caverns Formed?
- How Are Salt Caverns Formed?
- How Are Salt Caverns Used?
- What Types of Wastes Are Considered To Be Oil Field Wastes?
- What Are the Legal Requirements Governing Disposal of Oil Field Wastes into Salt Caverns?
- Are NOW or NORM Wastes Currently Being Disposed into Caverns?
- How Are Wastes Put into Caverns?
- What Types of Monitoring Are Appropriate for Disposal Caverns?
- What Happens to the Cavern When It Is Full?
- What Would Happen If Caverns Leak?
- What Are the Risks Posed by Leaks from Caverns?
- How Do Disposal Caverns Compare in Cost to Other Commercial Disposal Facilities in the Same Geographic Area
- Where Can You Get More Information About Salt Caverns?

Of particular value to readers is the final section on where to get additional information. This section provides the names and addresses of the Texas, Louisiana, and New Mexico agencies that deal with oil field wastes and their disposal, contact information for the four research organizations in the Partnership, and Internet addresses of the salt cavern information website and Argonne's website. Copies of the brochure will be made available to the public, and may be especially useful in communities where new disposal caverns are being considered. More information on obtaining copies of the brochure can be provided by John Ford of DOE’s National Petroleum Technology Office at 918-699-2061 or Argonne’s John Veil at 202-488-2450.

The Salt Cavern Information Website

The Salt Cavern Information Website contains the same basic information as the brochure, but it is expanded with much more detail in over 50 screens of information, photographs, and graphical images. Although the website includes general information about salt formations and salt caverns, the presentation of the information focuses on the use of caverns for waste disposal.

The topics in the website’s main menu include:

- Overview
- U.S. Subsurface Salt Deposits
- Description of Salt Caverns
- Uses of Salt Caverns
- Cavern Studies Funded by NPTO [National Petroleum Technology Office]
- New Information on Caverns
- Links to Other Sites

Each topic can be explored through a series of easily-navigated menus, and copies of numerous DOE-funded reports on salt caverns can be downloaded. The website was created by Argonne but is housed on the DOE National Petroleum Technology Office Internet site. The final website address has not been verified, but at the deadline for submission of this paper, the address is www.npto.doe.gov/saltcaverns. Argonne will update the website periodically to provide new technical findings, regulatory information, and schedules for meetings and conferences.

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References


