MMS News Releases

U.S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region

FOR RELEASE: February 16, 2001

Barney Congdon
(504) 736-2595

Caryl Fagot
(504) 736-2590

Debra Winbush
(504) 736-2597

MMS Releases Scientific Report on Barium- and Radium-Rich Fluids Seeping onto the Gulf of Mexico Seafloor

The Minerals Management Service (MMS), Gulf of Mexico Region, has released the results of a new scientific study on barium- and radium-rich fluids found in hydrocarbon seeps on the Gulf of Mexico seafloor off Louisiana. The report, *Fate and Effects of Barium and Radium-Rich Fluid Emissions from Hydrocarbon Seeps on the Benthic Habitats of the Gulf of Mexico Offshore Louisiana*, results from a study done by Louisiana State University under a cooperative agreement between MMS and the Coastal Marine Institute. MMS is the Agency responsible for overseeing offshore oil and gas development in a safe manner that protects the environment.

The primary goals of this study were to document products and processes related to barium- and radium-rich fluids seeping onto the seafloor and assess their impact on the seafloor habitats on the Louisiana upper slope of the Gulf of Mexico. Methods for coming up with an inventory of barium and radium sources and sinks involved sampling of pore fluids at the points of exit, barite deposits, and animal life inhabiting the seepage sites including mussels, crabs, and starfish. The barite deposits often form tube-like structures, called chimneys, that extend about one foot above the seafloor. Underground sources of the fluids and barite deposits were identified by use of chemical tracers. In addition, the radium content of the barites was used to date the deposits. The effects of the fluids on the mussels, crabs, and starfish inhabiting the seeps were determined by analyzing soft tissue bodies and hard exoskeletons.

Our results indicate that the fluids in the barite-bearing seeps are similar to produced waters from offshore fields and point to a deep-seated source matched to Mesozoic-age formation waters. The barite deposits surrounding the seeps serve as an important sink for the barium and radium. Barite chimneys are from a half-year to six-and-a-half years old, and their estimated growth rates vary from 4.4 centimeters a year to 9.1 centimeters a year, whereas the crusts are 9.0 to 23.1 years old. The animal life around the barite seeps has the ability to concentrate barium and radium in their body parts. In general, the crabs and starfish, compared with the mussels, appear to concentrate radium preferentially, probably through ingestion of the highly radioactive barite particles.

On the basis of mass balances we established leakage rates of 250 liters a year and 2,920 liters a year from point sources in Garden Banks and Mississippi Canyon, respectively. The areal extent of the barite-bearing seeps is not known with certainty, but our estimates suggest it may be considerable, matching in size the fluxes of barium and radium delivered to the Gulf of Mexico from the Mississippi River.

The MMS, a bureau in the U.S. Department of the Interior, is the federal agency that manages the nation's natural gas, oil and other mineral resources on the outer continental shelf. The agency also collects, accounts for and disburses more than $5 billion per year in revenues from federal offshore mineral leases and from onshore mineral leases on federal and Indian lands.

-MMS-GOM-

MMS's Website Address: **http://www.mms.gov**