

Geotechnical Engineering Seminar  
Wednesday, February 20, 2008  
Mason 142A, 12:00-1:00pm

**An Overview of Solid Waste Injection – A Geomechanics Perspective**  
by Quan Guo, M-I SWACO, Houston, Texas

**ABSTRACT:**

Downhole injection of drilling and production wastes involves grinding of the E&P (exploration and production) wastes with the present of water to make an injectable slurry and injecting the conditioned slurry into a deep formation under high pressures to create hydraulic fractures. The technology, often referred as cuttings re-injection (CRI), is very similar to conventional hydraulic fracturing, although the injection duration and volume in CRI are often much larger. CRI has shown success in both onshore and offshore operations and is often the most cost effective and environmentally sound solution for managing drilling and production wastes.

While CRI technology is advancing rapidly bringing with it more critical CRI projects in less favorable environments, it also poses many challenges as these projects are more complicated or critical in environmentally sensitive areas. Historical acceptable performance of CRI in specifically areas of the world, characterized by particular and localized formation and geo-mechanics conditions, have mislead the value of this solution because of adventurous extrapolation of local best practices in a general context. A CRI disposal solution must be supported by a sound engineering assessment, a risk assessment via simulation of different “what if” scenarios that provide operators a window of probabilities. In fact, projects where local best practices were extrapolated and generalized without specific understanding the in-situ geo-mechanics and formation conditions have lead to project delays and cost overruns. This presentation will present a geomechanics perspective, with case examples, towards risk management and increased assurance of successful CRI projects.

**BIO:**

Dr. Quan Guo is the Global Technical Advisor in Geomechanics in M-I SWACO. He has a BS degree in Mathematics and Mechanics from Lanzhou University, China; a MS degree in Engineering Mechanics from Huazhong University of Science and Technology, China, and a Ph.D. in Mechanical Engineering from Northwestern University, Illinois, USA.