

## **CE 890 Graduate Seminar**

**SPEAKER:** Jorge M. Gonzalez (Dr. Esmaily's Distance Learning Grad. Student)

**TOPIC:** "Melton Valley Accelerated Closure Project: An Overview"

**DATE:** October 14, 2009

**TIME:** 4:00 p.m. (refreshments at 3:45 p.m.)

**PLACE:** 2144 Fiedler Hall

### **ABSTRACT**

The Melton Valley in East Tennessee was used between 1951 and 1986 for the disposal of approximately 2 million curies of radioactive and mixed waste resulting from the Manhattan Project and the Cold War era. The principal method for solid waste disposal was shallow land burial in unlined trenches. Deterioration of buried waste containers has been ongoing for the last forty years, and contaminant discharges to rivers, lakes and tributaries continue. Liquid radioactive wastes were disposed of initially by allowing them to seep into soils through shallow, unlined seepage pits and trenches. In the early 1970's, the hydro-fracture facilities were constructed to mix the wastes with cement grout and inject the grout-waste mixture deep under the ground (800 to 1000 feet below the ground surface). The combination of high annual rainfall (55 inches of annual rainfall), shallow groundwater conditions, and waste buried in or near the water table promotes the formation of contaminated leachate. The rate of water seepage through the uncapped burial trenches and through the shallow groundwater system to the nearby water streams such as White Oak Creek has been rapidly increasing in recent years. Mobile contaminants can travel from source trenches to streams in hours when large storms occur. Based on risk assessment models, approximately 80% of the human health risk in surface water at the White Oak Dam originates in Melton Valley.

The Melton Valley Closure Project was widely reviewed and accepted by the public through the CERCLA process in the 1970s, and a signed interim record of decision aimed to the mitigation of environmental deficiencies in the region was in place by 1979. Remedial field work was finally initiated in 2000 at a total estimated cost of \$86M.

The intent of this presentation is to provide the audience with a brief overview of the historical events leading to the creation of the Manhattan Project in 1945, with an emphasis on the environmental challenges faced by the United States during the years that preceded the end of the Cold War. In addition, this presentation will address the scope of specific corrective actions implemented during the execution of the Melton Valley Closure Project and the effectiveness of these corrective actions in improving the environmental quality in the region.