A NEW METHOD FOR STABILIZING AND REDUCING THE VOLUME OF LOW-LEVEL AND HEAVY METAL CONTAMINATED WASTE

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ABSTRACT

In 1996, RMRS began an independent research and development project to develop stabilization technology for treating a variety of radioactive and hazardous waste streams. RMRS has built upon existing company and parent company (Morrison Knudsen Corporations and BNFL, Inc.) expertise to develop a simple, but effective way to bind contaminants without increasing the volume of waste. The results of these studies produced a proprietary process called Envirobric™. The Envirobric™ process converts contaminated bulk soil and soil-like waste into a solid that meets land disposal criteria. The Envirobric™ is highly resistant to water, and does not require additional coatings or ceramic firing.

Testing to date includes the preparation of nearly 200 laboratory samples using seven different types of waste or waste surrogates. The Envirobric™ formulation has been

optimized for various compositions of sand/clay mixes. Four hundred full size bricks have been produced in the field at two separate locations. The bricks have successfully passed tests for compressive strength, resistance to water, and Toxic Characteristic Leaching Procedure (TCLP) testing of the ability to resist leaching of heavy metals.

This paper reports the details of the successful demonstration. Test results from treated surrogates of Department of Energy (DOE) waste, generic waste forms, and mine tailings are given. The results show that a wide variety of heavy metals can be treated. A volume reduction of between 30% and 50% has been achieved and the compressive strength of the finished product is over 2000 psi. Laboratory data also indicate that the binder is effective in treating radionuclides such as uranium, plutonium, and strontium.