

First cast-stone treatment samples produced

CH2M HILL Hanford Group, Inc. is testing a new treatment method for the Office of River Protection by mixing selected Hanford tank waste with additives to cast a stone-like material in retrievable containers for disposal.

The containerized cast-stone method is one of three supplemental treatment technologies CH2M HILL is investigating for ORP to treat low-level or low-level mixed tank waste for disposal on or off the Hanford Site. The treatment methods are called supplemental technologies because they would be used to supplement Hanford's Waste Treatment Plant, which is currently under construction.

"While grouts are commonly used throughout the world to immobilize radioactive and hazardous waste, we want to look at the latest advances in treatment technologies and see how they could work with Hanford tank wastes," said Dale Allen, CH2M HILL Hanford Group senior vice president of Strategic Planning and Mission Analysis. "Success in evaluating and deploying the right technologies is critical to treating all of Hanford's tank waste by 2028."



Containerized cast stone (the sample on left) is significantly denser and less porous than previous grout treatment methods considered at Hanford (sample on right) or the kind of grout one might buy at a home-improvement store.

Testing contract awarded

In April, CH2M HILL Hanford Group awarded a contract to Fluor Federal Services to conduct the first phase of testing. Members of the Fluor Federal Services contract team include Duratek Federal Services, the 222-S Laboratory operated by Fluor Hanford, Portage Environmental and the Center for Laboratory Science at Columbia Basin College.

The Center for Laboratory Science is doing the initial testing with non-radioactive simulated waste in a laboratory on the campus of Columbia Basin College. Testing with actual tank waste will then follow at the 222-S Laboratory on the Hanford Site. Under its contract with CH2M HILL, Fluor Federal Services will also provide pre-conceptual engineering for a full-scale production system.

After that first phase of work, an evaluation of containerized cast stone and other supplemental treatment technologies will enable ORP to decide the best way to move forward on building and operating facilities to provide supplemental treatment of Hanford tank waste.

The potential treatment method would accelerate Hanford tank cleanup by reducing the amount of waste requiring glassification in the Waste Treat-

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ment Plant. The cast-stone applications being considered for use at Hanford consist of mixing tank waste that is high in salt content with dry materials, then casting the mixture in a container suitable for land disposal. The mixture is also formulated to immobilize technetium, a long-lived radionuclide of concern in Hanford tank waste.

Different from grout

“Up until this point, the method has commonly been referred to as containerized grout, but we have found in doing some initial testing that the material is more comparable in density and permeability to marble,” said Rick Raymond, supplemental treatment director for CH2M HILL Hanford Group. “Calling it cast stone more accurately describes the material’s properties, because it is significantly more dense and less porous than previous grout treatment methods considered at Hanford or the kind of grout one might buy at a home-improvement store.” ■



CH2M HILL Hanford Group is evaluating three methods for potentially treating tank waste for the DOE Office of River Protection. Billie Mauss of ORP (left) and Rick Raymond of CH2M HILL examine a larger sample of containerized cast stone, the product of one of the three treatment methods. The sample was mixed with simulated tank waste and cast at the Center for Laboratory Science on the Columbia Basin College campus. Over the next few months, a Fluor Federal Services team will conduct more tests of the cast stone method, using real Hanford tank waste, at the 222-S Laboratory.