AVANTech INCORPORATED

Technology Solutions Experience

AVANTech Recognized for Groundwater Remediation System at Waste Management Conference

AVANTech was recently recognized at the Waste Management Conference held annually in Tucson, AZ for its support of the groundwater remediation work at Fluor Hanford. Attached is a synopsis of the newsletter transmitted to all conference attendees. Avantech was awarded the contract to design, build, and operate a groundwater remediation system to remove chromium in December 2006. This system will be utilized to remediate hexavalent chromium from the groundwater. AVANTech's approach to services integration makes us uniquely qualified to provide turnkey services. Our broad range of skills enables us to quickly integrate complex projects. Our personnel have extensive experience in the planning, design, manufacturing and operation of water treatment systems for industrial and government clients. "This contract is an excellent example of our ability to solve clients complex problems in a simple and cost effective manner" stated AVANTech President Jim Braun.

Avantech is a water treatment company with a commitment to providing service second to none! Avantech was founded in 1999 and has expanded its business by applying the talents of its technical team. Our personnel have extensive experience in the planning, design, manufacturing and operation of water treatment systems for industrial and government clients. Avantech's standard product line includes basic chemical treatment, filtration, and disinfection processes to sophisticated technologies such as ultra-filtration, reverse osmosis, and continuous de-ionization. AVANTech technologies have enabled many industrial facilities to establish zero liquid discharge operations by completely recycling all of their wastewater.

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Three new initiatives launched at Hanford to protect groundwater

Hanford's Soil & Groundwater Remediation Project (SGRP), managed by Fluor Hanford, has begun an aggressive, three-pronged campaign to mitigate groundwater contamination in an area that contains the most concentrated plumes of hexavalent chromium (Cr+6) contamination anywhere on the Site. The contamination comes from sodium dichromate that was added to the cooling water in Hanford's reactors to help keep the process tubes from rusting. Hexavalent chromium, a carcinogen, is soluble in water.

Some of the groundwater in the 100-D Area contains 3,000 parts per billion (ppb) of hexavalent chromium. The standard for drinking water established by the Environmental Protection Agency (EPA) is 100 ppb; the aquatic standard, 10 ppb. The remedial action objective (a cleanup goal agreed to by the Department of Energy (DOE) and the regulators) is 20 ppb.

The new campaign concentrates on reducing or eliminating soluble chromium in the aquifer, either by removing it or changing it to an insoluble form of the metal (Cr+3) that is not as toxic to living organisms. The goal is cleaning up the groundwater in this area to below regulatory threshold levels in less than a decade.

A special allocation from DOE's Environmental Management Office of Cleanup Technologies is funding this effort. Fluor Hanford received just over one-third of a $10-million appropriation, all of it going to address contamination in the 100-D Area. The three sub-projects will test electrocoagulation as a treatment process, strengthen an existing underground barrier in the area, and search for the source of contamination.

AVANTech of Columbia, South Carolina, a subcontractor to Fluor, will demonstrate the effectiveness of electrocoagulation. In a pilot test that begins this April and runs for six months, contaminated groundwater will be pumped through a unit that uses an electric current to change the properties of the chromium. The current causes some of the iron in the water to dissolve, which changes the soluble chromium to insoluble chromium, making it and other chemicals fall out of solution as small particles. A simple clarifier/filter system separates and collects the excess chromium, which is then dried and packed in barrels, for disposal in Hanford's on-site facility. Test results will be compared against the existing pump-and-treat systems that use ion-exchange resins.

Another technology will test the ability to mend or strengthen the In Situ Redox Manipulation (ISRM) barrier. This passive, underground system - that uses natural iron in the aquifer - has been treating groundwater in the 100-D Area since 1999. As water runs through the barrier, the iron turns to rust, giving up electrically charged particles that change the soluble form of chromium into its insoluble form. The barrier has begun failing, probably because the aquifer formation doesn't have enough iron naturally. The new plan calls for injecting a slurry of micron-sized iron particles into two existing wells to augment the natural iron and mend/reactivate the barrier. Fluor has contracted MSE-Technology Applications of Butte, Montana to do this work.

The third effort involves locating a main source of chromium. Pump-and-treat systems have operated in the 100-D Area for over nine years and numerous sources of hexavalent chromium have already been found and remediated. Fluor Hanford is trying to find the hexavalent chromium in the vadose zone (soil between the surface of the ground and the water table) by drilling bore holes to take soil samples, completing the boreholes as monitoring wells, and then working with Pacific Northwest National Laboratory to evaluate the results and narrow the boundaries of the chromium source. After that, a treatment method will be selected.