

ARSENIC REMOVAL AT A TEXAS CHEMICAL PLANT SITE

BACKGROUND

A chemical company in Texas conducted a comprehensive groundwater cleanup program in 1997 with a significant focus on the removal of arsenic. The company initially chose an activated alumina technology to remove the arsenic, but found it to be ineffective and extremely costly due to the large amounts of caustic chemicals required for regeneration. Loading of the material into the column was extremely dusty and hazardous and large quantities of basic waste solutions were being generated. Their requirement was to treat 50 gallons per minute (gpm) of groundwater to a level of 20 parts per billion (ppb) of arsenic as an internal limit, with an absolute legal maximum of 50ppb.

TYPICAL ANALYSES

Total Arsenic150-300ppb
 PH7.16
 Turbidity0.90 units

HYDROGLOBE'S SOLUTION

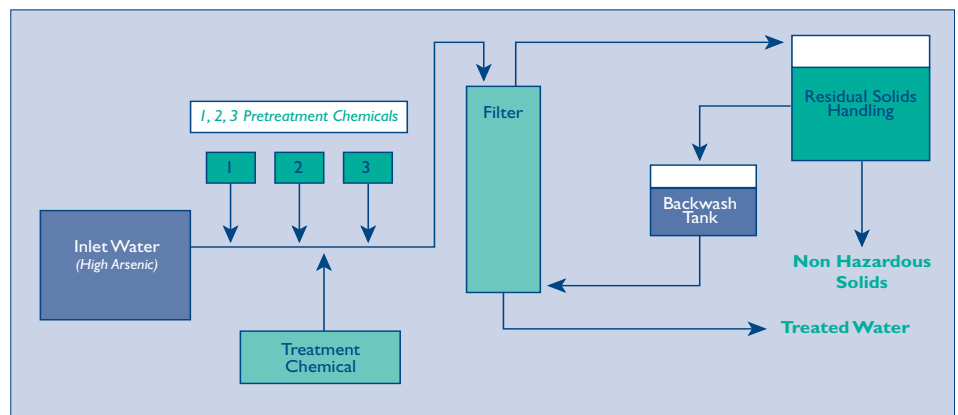
Samples of the water were sent to HydroGlobe's laboratory where analyses showed that approximately 50% of the arsenic was soluble. Engineers used a column test of the patent-pending FerriMet™ system to determine that arsenic could be reduced to the desired level using small quantities of treatment chemicals. HydroGlobe™ professionals traveled to Texas and ran a 14-day test of the FerriMet™ system. The large level of influent suspended solids caused very short filter runs so the HydroGlobe™ team recommended the use of a dual media filter for the long-term solution. To expedite

completion of the trial, a drum was used to settle the suspended solids entering the system. Subsequently, the treatment runs became an acceptable length, governed by the differential pressure across the filter. Effluent levels of arsenic fell quickly below 50 ppb at the start; then below 20 ppb for the remainder of the run.

SUMMARY

The company concluded that the FerriMet™ system from HydroGlobe™ met their needs and retrofitted the existing activated alumina equipment. The FerriMet™ system has been in successful operation since 1997.

FERRIMET™ SYSTEM CONFIGURATION



RESULTS

The data showed high arsenic removal:

Inlet Arsenic226ppb
 Outlet Arsenic18ppb
 Removal92%

The solids were nonhazardous as the TCLP test results were 2 orders of magnitude below the limit for arsenic. Operating costs were extremely low, with chemicals costs less than \$0.030 per 1000 gallons, and process generated solids waste disposal costs less than \$0.004 per 1000 gallons.



Operating FerriMet™ System