



PENNSYLVANIA ISCO PROJECT - TOTAL CHEMICAL MANAGEMENT PROGRAM

Project Scope

A remediation company was contracted to perform a cleanup of an abandoned gas station in south central Pennsylvania. The consulting engineer and the remediation contractor selected a treatment program utilizing In-Situ Chemical Oxidation (ISCO) as the preferred treatment technology. Due to the magnitude of the contamination and the widespread nature of the groundwater contamination, significant quantities of chemicals including hydrochloric acid, ferrous sulfate, hydrogen peroxide and sodium persulfate as well as equipment were required to execute remediation of the site.

The scope and structure of the project required that a high volume of multiple chemicals be mobilized quickly, which created a significant operational and cost challenge for the contractor. USP Technologies (USP) developed a Total Chemical Management program to efficiently and cost-effectively execute the project.



Solution

Based on the requirements for the project, USP developed a Total Chemical Management program to meet project schedules and budget objectives, which included the following:

Site Analysis and Hazards Review

USP engineering personnel worked closely with the remediation contractor to evaluate and plan for the specific hazards of the project site. Equipment was selected to ensure the chemical containment site security provided additional public protection. In addition, a water storage tank for emergency response and to support product dilution requirements was required as only a restricted-flow water source was available.

Turn-Key Scope of Supply

System Engineering and Equipment Design

USP engineered an equipment program with multiple chemical mixing, storage and conveyance systems designed and sized specifically for this project. It was also designed according to strict engineering and chemical industry standards to provide safe, reliable and cost-effective equipment solutions utilizing field-tested modular components for operational reliability, improved performance and simplified installation and start-up.

Turn-Key Scope of Supply (continued)

Chemical Supply

Hydrochloric acid was provided in 55-gallon drums with properly-designed drum pumps.

Ferrous sulfate was injected as a liquid. The dry product is often mixed into solution by hand, but with over 2.5 tons of dry product required, there were considerable concerns about the safety of the field personnel. As an alternative, USP developed a plan to provide an on-site storage and containment system to receive, store, and deliver the chemical in pre-mixed liquid form resulting in increased application efficiency and reduced overall costs.

Through a modular on-site dilution system, hydrogen peroxide was received and stored at a 50% concentration, diluted to a custom 8% solution for initial conditioning, and to 17.5% for full-scale operation. The 50% H₂O₂ was delivered to the site in a 5,500 gallon bottom-discharge isotainer specifically designed for H₂O₂ service. The isotainer was then refilled with full tanker truck deliveries of 50% solution. USP provided a series of double and single wall HDPE tanks for dilution water and dilute H₂O₂ storage. The onsite dilution system and the ability to take full tanker truck deliveries reduced the hydrogen peroxide costs by over 50%.

Equipment Supply

Chemical Dosing Systems: Modular chemical dosing systems were provided to feed all the chemicals to the treatment wells, in addition to all interconnecting piping from the storage tanks to the well feed control devices.

Field Support Services

Emergency Response Module: USP provided an emergency eyewash and safety shower station complete with a water filter and emergency response water supply. Pump skids provided potable water to the safety stations.

Multi-Chemical Supply for Remediation

US Peroxide can service your total chemical management needs:

- Hydrogen Peroxide (custom blending %)
- Full Suite of PeroxyChem Chemicals
 - Klozur® ▪ Klozur OBC® ▪ Permeox®
- Specialty VeruTEK Products
 - VeruSol Compounds ▪ Others
- Ferrous Sulfate/Ferrous Sulfate EDTA
- Sodium Hydroxide
- Permanganates
- Acids

About USP Technologies

USP Technologies' ongoing mission is to help customers meet their water quality objectives by providing eco-efficient solutions that reduce and recover cost, energy, resources and space. Through a collaborative method of working closely with customers to solve problems, we are dedicated to developing innovative, sustainable and cost-effective solutions that successfully meet the highest standards of environmental stewardship. Our consultative approach includes application assessment, technology selection and field implementation of a custom engineered treatment solution. Our turn-key programs seamlessly integrate storage and dosing equipment systems, chemical supply, inventory and logistics management, and ongoing field and technical support. USP Technologies has been serving the water, wastewater and remediation markets for more than 20 years and has offices and field service locations throughout North America. We are the largest direct supplier of peroxygen-based technologies for environmental service applications and we manage hundreds of successful full-service chemical programs that treat over 1.0 billion gallons of water per day.

Getting Started

We look forward to supporting your treatment needs, whatever the scale of your requirements. To obtain a streamlined treatment solution tailored to your specific project, give us a call at (877) 346-4262.

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