Norfolk Ram Group, LLC

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THE NRG REPORT

Up Close With Norfolk's Brian V. Moran, P.E., LSP

Brian V. Moran, P.E., LSP
Principal
Norfolk Ram Group, LLC

Brian V. Moran, P.E., LSP has been using chemical oxidation to remediate sites contaminated with petroleum, chlorinated solvents and heavy metals since 1994. Mr. Moran was the first to develop and implement chemical oxidation for remediation in Massachusetts, and has been instrumental in working with and educating state regulators on the benefits and appropriate applications of this technology. Mr. Moran has extensive experience in the implementation of Fenton's Reagent and sodium percarbonate at hundreds of sites throughout New England, the Mid-Atlantic states and in Eastern Europe. Mr. Moran continually seeks ways to refine and improve the technology, as well as to increase its effectiveness on soil and groundwater contamination.

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Norfolk Ram Group, LLC (Norfolk) Leads the Way in Chemical Oxidation Services

An Interview with Norfolk's Principal and Remediation Expert, Brian V. Moran, P.E., LSP

You've been working with *In-Situ* Chemical Oxidation (ISCO) for a long time. How did you first get started?

Brian Moran:

It was out of necessity that I originally began using hydrogen peroxide to treat soil and groundwater contamination. We were working on a project in 1994 in Malden, Massachusetts where 150-gallons of #2 fuel oil had spilled under the foundation of a house. The oil had penetrated the soils and there was no conventional way to clean it up, short of demolishing the house and excavating. At the time, I had been reading some of Dr. Richard Watts' technical papers from Washington State University on peroxide remediation (Fenton's Reagent), and decided that peroxide might be a good way to approach the cleanup at the site. This was one of those rare cases when I was able to get the insurance company (who was paying the bill), and the Department of Environmental Protection (DEP) (Chris Bresnahan of the Massachusetts DEP Northeast Region) to agree to allow the use of what was at the time an experimental technology. The technology was still in the development stage, and no full-scale clean-up with hydrogen peroxide, to my knowledge, had been done anywhere in the United States. To make a long story short, injections of peroxide into the soils around the house worked well to clean up the soils, enabling the file on the site to be closed. We have been using peroxide for remediation ever since, and have completed hundreds of successful clean-up projects. It is not surprising that many firms are now trying to educate themselves on applying these techniques.

High pressure Geoprobe groundwater treatment at an active gas station

Why do you think ISCO is experiencing such increased use?

Brian Moran:

Back in 1994, when I was one of the few in the country using this technology on a full-scale basis, even regulators were skeptical about its viability and whether it could be used safely. Now, just ten years later, it has become a proven, mainstream, remediation technology, and something clients ask for by name. Most environmental consultants now recognize its benefits and effectiveness in treating soil and groundwater, which has been contaminated by petroleum, chlorinated solvents and metals.

The treatment of a waste oil release to the soil and groundwater at an automotive dealership with Fenton's Reagent

ISCO is particularly appealing because it is often cost-effective. In cases where contaminants are widespread, it can save money over traditional excavate and haul approaches, or other remediation technologies such as AS/SVE, or pump and treat. With groundwater contamination, we have refined our approach to a point where we can often minimize contamination to levels low enough to close a site, eliminating the cost and maintenance requirements of long-term, pump-and-treat systems. When contamination is located near buildings or infrastructures, ISCO is often the first choice, because it eliminates the need for structural support and post-remediation repair, because there is only minimal disturbance to the treated soils. On Norfolk's part, we can provide ISCO services more cost-effectively than others because of the long-term relationships we have established with the suppliers of our materials.

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Norfolk Ram Group, LLC (Norfolk) Leads the Way in Chemical Oxidation Services (continued...)

What are recent trends in ISCO technology?

Brian Moran:

ISCO is still very much an emerging technology. We are continually improving our success rates and fine tuning our application strategies. Some might say that this technology is as much an art, as a science, and our continuous refinements are paying off for the client and yielding better clean-up results. I believe the industry will continue to see an increased use of ISCO technology in the coming years, as ISCO's effectiveness and cost benefits become more widely known.

Groundwater treatment of solvents with a low pressure pump

A more specific trend is in the increasing use of alkaline forms of ISCO treatment, such as sodium percarbonate, what we call "dry peroxide." We began using this oxidizer about 6 years ago, in order to treat the contamination in high pH soils. A key benefit to this technology is that it is less hazardous to handle than Fenton's Reagent, but depending upon the site's conditions, it may not always be the best choice. The key is to understand each technology and apply it in a way that maximizes the effectiveness. I expect that dry peroxide will soon be a well known tool in the remediation technologies tool box.

How do you determine whether ISCO is appropriate for use at a site?

Brian Moran:

Despite advancements in remediation technology, there is still no "one size fits all" approach to site remediation. A consultant's focus must always be on selecting a technology, or combination of technologies, which will achieve the best results for a client. The choice of a technology could be very different from one site to the next, depending upon the site's conditions. Before recommending ISCO, a consultant must thoroughly understand the conditions unique to the site, including soils, pH, type of contamination, groundwater depth, proximity to sensitive areas, and other site-specific characteristics. These factors will also determine the specifics of how treatments are applied, how often they are applied and in what volume. When Norfolk performs a site assessment, we keep in mind all of the possible remediation approaches, and gather enough information to determine which approach, or combination of approaches, will give the best result. Norfolk's track record in achieving site closure would suggest that this comprehensive approach to assessment and remediation directly benefits our clients.

Treatment of soil located below the foundation of a home

Norfolk works directly with clients and other consultants, in order to advise on the use of ISCO, and then to implement the technology. For questions related to this article, or on Norfolk's ISCO services, please contact Norfolk's Brian V. Moran, P.E., LSP at 508-478-1276, extension 12, or via email at bmoran@norfolkram.com. Norfolk can also be accessed on the internet at www.norfolkram.com

Norfolk Ram Group, LLC is a full-service environmental and civil engineering consulting firm, which specializes in environmental compliance, permitting, assessment, design/build remediation, and civil engineering.

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