



Client Testimonials

“We completed an in-situ pilot-scale application of the Ivey-sol® surfactant technology at an industrial site with VC, DCE and TCE chlorinated contamination. We commenced site remediation with MPE with very good results, but eventually the rate of vapor, dissolved, and DNAPL phase mass recovery reduced over time. The introduction of Ivey-sol® significantly increased mass recovery of all phases, leading to our decision to go to full scale, pairing the MPE and Ivey-sol® technologies as an effective remediation strategy for the site”

Dennis Tu, Executive Director China Environment

AECOM

“We increased the TPH Mass Recovery Rate by 10x, removed TPH-d from vadose zone and lowered groundwater concentrations. Regulatory Agency agreed to a risk based closure if contamination levels continue to decrease” [Site has since achieved regulatory closure]

Galen Kenoyer, Senior Hydrogeologist

Chris D'Sa, Senior Project Manager



We have been operating a dual-phase vacuum extraction (DPVE) system at an active grain elevator for approximately 9 years to address a groundwater source area consisting of carbon tetrachloride, carbon disulfide, and chloroform. In 2015, Burns & McDonnell conducted a pilot-scale application of Ivey-sol® surfactant in an effort to enhance DPVE efficiency and recover the remaining source area contamination at the site. The pilot study indicated significant increases in contaminant mass removal. As a result, Burns & McDonnell conducted a full-scale surfactant application, consisting of up to 275 gallons of surfactant mixed to approximately 1 to 2 percent by volume, to the source area in late 2016. The introduction of the Ivey-sol surfactant significantly increased dissolved-phase mass removal and the effects of this increase on DPVE efficiency were observed up to 6 months after the application. During both the pilot and full-scale phases, existing DPVE infrastructure was utilized to complete the surfactant delivery and recovery, thus significantly reducing the cost of remediation. Burns & McDonnell was very pleased in the performance of the Ivey-sol® surfactant and continued support by Ivey-sol® staff.

Eric Dulle, PE, Project Manager

BURNS & MCDONNELL

Ivey International Inc.

Tel: +1 604 538 1168 Fax: +1 888 640 3622 Email: info@iveyinternational.com Web: www.iveyinternational.com

“Given the complex nature of in-situ remediation projects, the most appropriate technologies need to be versatile and able to be adapted to various soil types and site-specific hydrogeological conditions. We have found the suite of Ivey-sol® surfactant products, and processes, to be very adaptable, affordable, and effective for the desorption and recovery of significant contaminant mass at our sites”.

J. Peter Misener, Chairman



“In July 2019 we were faced with a 320,000 liter crude oil and produced water spill at a facility in northern Alberta. With our rapid spill response strategy, utilizing the innovative Ivey-sol® surfactant remediation technology, we achieved significant time, cost, and environmentally sustainable cleanup benefits, resolving more than 99% of the spill on the hillside. We and our client were very pleased with the outcome of this project”



“We accomplished more with \$50,000 of Ivey-sol® than we did with the first \$500,000 we spent on the site over the previous 4 years. Ivey-sol® Increased our average rate of contaminant recovery by >409%”

Daniel Smith, Hydrogeologist



“Ivey-sol® has been proven highly effective at remediating both oil-based contamination and chlorinated solvents in a variety of different soil types, ranging from sands to clays. Given the current need for innovative and cost-effective cleanup technologies, usage of Ivey-sol® will significantly increase in the upcoming years.”

Bruce Tunnicliffe, President



“The in-situ application of the Ivey-sol® surfactant technology significantly increased the DNAPL and BTEX mass recovery from the impacted soil and groundwater on-site. We were very pleased by these results leading to our recommending a full scale site application as a rapid and cost effective method to achieve site clean-up”

Martin Beaudoin, Project Engineer



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"I credit this technology with saving my company tens of thousands of dollars after using it to treat a fuel-oil spill. Drinking water was contaminated and I looked at a number of technologies. They wanted to put recovery towers in and stripper systems costing more than \$100,000, and I was told remediation would take five to seven years. But Ivey-sol® did it in less than 18 months saving some \$60,000, while meeting stringent environmental standards."

Peter Clark, President



"Ecologia applied the Ivey-sol 108 surfactant product using an in-situ multi-well sweep application to enhance the rate of LNAPL recovery at an active factory site. The Ivey-sol applications permitted a significant reduction in the LNAPL saturation, leading to a reduction in LNAPL mobility by approximately 3 orders of magnitude. We are, and have been, very pleased with the efficacy, ease of use and reliability of the Ivey-sol remediation technology at our project sites"

David Holmes BSc (Hons), MSc, PhD, MCIWEM, C.WEM, CSci
Technical Manager - Ecologia Environmental Solutions Limite



"At an EU military site the UTCHEM model was able to simulate the Pilot SEAR and that injected fluids were contained within the pilot application area. Further, the simulations estimated an approximate 1000 % increase in jet-fuel oil mass recovery with the application of the Ivey-sol® surfactant technology, compared to water injections without Ivey-sol®. The model also showed that the main process for mass removal during SEAR was production of a micro-emulsion."

Soren Rygaard Lenschow, Project Manager



"Using low concentrations of Ivey-sol® solution, free product was successfully removed from shale. Soil shale washing with Ivey-sol is a cost-effective technology for on-site treatment of impacted soils. Based on the parameters above, projected treatment price for a small scale project (< 2,000 tonnes) would be \$35 per ton, which is currently less expensive than disposing of the impacted material at a landfill and replacement with clean fill. Obviously, with larger projects, the economies of scale will drive the price down even lower"

Kyle Dacey, Manager of Technical Services



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This summer Green Star Environmental (Green Star) was performing cleanup of a crude oil spill into a fresh-water pond in North-Central Texas. The release was from the overflow of viscous weathered crude out of an open-top produced water tank into a shallow area of a pond heavily vegetated with cattails. Skimming operations had successfully recovered the greatest portion of free crude oil. However, persistent globs of the sticky crude oil continued seeping into the pond surface across the impacted area. Crude oil would slowly seep from the vegetation and other organic materials at the base of the pond. Green Star had previously used Ivey-sof® during in-situ remediation and knew how well it worked on releasing organics in subsurface aquifers. We also knew Ivey-sof® was safe for the pond, as it is food grade quality and non-toxic. So, we ordered a five-gallon pail to apply across the impacted area. We applied a 10% mixture on the pond surface, over the vegetation, and mixed it well in shallow areas of the pond. Within an hour there were no more globules of crude, no sheens, no indication of any crude oil. The pond was carefully inspected by the Regulator, and closed by the Regulatory Agency the next week. Ivey-sof® worked tremendously well as a polish to finish scrubbing and dispersing the residual oil. It saved our client weeks of continued skimming operations with minimum expense. We will continue use of this great product on future cleanup sites.

R. Steven George, President & CEO



“After excavation and bio-piling of the soil, the surfactant enhanced bioremediation (SEB®) treatment was applied and the bio-pile was covered. Daily aeration was done during the treatment period. After only 12 weeks, samples were taken from the bio-pile showing that the remediation of the fuel-oil and PAH contamination was completed to the BC Environmental Standards and safe for reuse on-site”

Tony Robson, Director Mining & Equipment



“We have been using the Ivey-sof® surfactant product developed by Ivey International Inc. since 2006. Our applications have mainly centered on commercial, industrial, oil and gas cleaning and decontamination services. Our general opinion of the product has been positive, as has the technical support we have received from IVEY, making it a reliable resource to meeting our upstream client requirements. I would recommend this product for petroleum storage decontamination applications”

Lee F. Hunter, CEO



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"The project we are now working on is in tight clay soil, 6 meters deep, 35 meters by 20 meters in area. The projected clean-up will be 9 to 12 months. This is very fast compared to any other in-situ process that we are aware of. The only thing faster is digging up the site and hauling away the soil. This process is very cost effective and will save between \$40,000 to \$60,000 compared to the closest available technology that we are aware of"

Terry Timothy, Manager of Environmental Services



"We used a combination of Ivey-sof® technology and soil excavation. It certainly saved us the headache of having to do more by way of foundation excavation. The result was the important thing. Ivey-sof® was a good add-on to the original excavation and we got the results we wanted"

Mike Roy, Senior Claims Adjuster



"The name of the game is satisfactory results and closing the file as quickly as possible. Ivey-sof® technology is a big help when excavation isn't an attractive option"

Bill McCann, Senior Claims Adjuster



"We used Ivey-sof® surfactant technology and experienced significant enhancement of contaminant mass recovery! This technology significantly sped up the remediation project, saving my clients time and money! We were very pleased with the results and would recommend others to try it"

Dan Smith, Principle Hydrogeologist



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"With Ivey-sol® SEB® we observed a noticeable drop in the level of contaminants, in bio-piles, within a two-month period" [This was after a 18 month stall]

**Brad Shybunka, B.Sc., P.Ag., Senior Project Manager Operations
Bio-Synergy Resources Inc.**



"Our research has confirmed that the Ivey-sol® surfactant technology increases the controlled solubility and rate of MTBE recovery from impacted soil and groundwater by >740%" "Our research has shown that the Ivey-sol® surfactant technology can increase the controlled solubility rate of PCB into groundwater for mass recovery by >900%"

Dr. Davis Craft, University of Alberta



"We had to evacuate the building after the fuel oil spill, it was a mess. Ivey-sol® cleaned up the site rapidly. It improved the indoor air (vapor intrusion), soil and groundwater quality"

John Vidditto - Developer/ Property Owner

DEVELOPER

"I think the future for the Ivey-sol surfactant technology is bright. It's based on sound science and Ivey International Inc. has lots of field application experience"

Lisa Rear, P.Bio., Environmental Consultant

CONSULTANT

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