

# Simplifying soil remediation

**Angela Vande, Vande Consulting, thinks that soil remediation could be much simpler – by using non-toxic spray-on soil remediation treatments, contaminants can be broken down in situ, mitigating the need for expensive, disruptive excavation.**

**S**pray-on soil remediation treatments for hydrocarbons and salts offer a quick, effective way to clean contaminated soils by simply saturating the affected area. The treatment is non-toxic, non-hazardous, non-carcinogenic, with no forever chemicals. It breaks down contaminants more efficiently than traditional soil excavation methods with no excavation required and minimises disruption to the environment. No foreign microbes are introduced, such that no residue or by-products remain.

## **The high stakes of soil remediation**

While consumers are flocking to dealerships to compare the latest gasoline, electric or hybrid vehicle options that align with financial, environmental and personal values, the oil and gas industry is engaging in a cost-benefit analysis of its own. Understanding the science and efficacy behind various soil remediation systems is a moving target, subject to regulatory pressure, industry standards, and available services. What if you could take these decisions into your own hands and take care of your own soil remediation needs without the need for consulting or outsourcing?

While economies and governments debate the future of oil and gas, savvy companies can get a head-start on addressing the environmental impacts either way. At the crossroads of conventional and renewable energy, there exists a need to repair the mistakes of the past while mitigating harmful environmental effects for future generations. Despite the most stringent of safety precautions, oil spills will sometimes occur. Past global oil spills have been highly publicised, with many left untreated, drawing the ire of environmentalists and private

citizens alike. Vibrant communities and sensitive ecosystems transform into contaminated wastelands, with media coverage shining a spotlight on the devastating effects on wildlife, agriculture, ways of life, and local economies.

Oil spills are often seen as preventable disasters. Many feel angry with corporations or governments, citing negligence and irresponsibility, with a lack of accountability compounding these frustrations. However, even the most altruistic site owners have found that remediation is not a straightforward process. Between the massive price tag, the challenging coordination of environmental liabilities, and navigating available solutions, site owners have often fallen short of public demands. Polishing a tarnished reputation has proven difficult for oil industries.

## **Conventional solutions**

Typical soil remediation commonly involves digging and trucking contaminated soil to a landfill. While still a common practice, this method disturbs the soil, releasing volatile organic compounds into the air, and further dispersing through the transportation process via unsealed trucks. Landfills, in addition to rapidly filling up, may produce leachate. Leachate is a toxic liquid that is formed when rainwater filters through waste. Leachate can seep into the soil and groundwater, contaminating water supplies with heavy metals, chemicals, and pathogens. EPA-established guidelines seek to minimise, but not eliminate leachates. A better solution exists through cleaning the soil right where it lies. In-situ treatments have been commercially deployed for several years, and eliminate

the need for transportation while lowering the risk for future leachate contamination.

### Introducing a solution

Vande's RemediMaker is a unique, proven, spray-on treatment for both oil and saltwater spills that addresses old contamination and new spills. Designed by a team with environmental engineering and PhD chemistry expertise, this novel improvement on existing processes combines cutting-edge technology with ease-of-use features: simply spray, saturate, allow to soak, and remediate in place, all through a process similar to watering a lawn. One treatment is all that is needed for most applications. RemediMaker differs from existing products by eliminating the need to introduce foreign microbes and by adding a soil conditioner. This pharmaceutical-grade blend prepares the soil to accept the treatment, while a high-grade catalyst introduces seven components to activate natural microbes existing in the soil. Additional degradation



Figure 1. Please provide caption.



Figure 2. Please provide caption.

reactions are triggered and may be verified by odour reduction in as few as four hours. A nutrient boost is added to leave soil healthy and capable of sustaining vegetation after treatment.

### Treating salt contamination

Soil contaminated with salts has previously been categorised as untreatable. RemediMaker can reverse both salt and hydrocarbon damage without removing topsoil, meaning no excavation, heavy equipment or landfill costs are incurred. RemediMaker's engineered treatment generates multiple reactions shortly after the fluid combines with soil. The reaction is hydrophilic, with rain or snowfall providing overall benefits. All ingredients are considered non-hazardous and pharmaceutical grade, with no harmful by-products or residues generated. Specially formulated to incorporate multiple chemical processes without the use of forever chemicals, hormone disruptors, or carcinogens, RemediMaker offers an economic, green solution. No foreign bacteria are added, by design. With up to 60 000 native species in a teaspoon of soil, this ratio is not disrupted. Furthermore, salt remediation can be difficult to treat due to the tight sodium-to-soil bonds and particle disaggregation. Our chemistry harnesses the powerful, natural process of healing, digestion, molecular bonding, and soil vulnerability.

### Benefits

It is difficult to quantify the benefits of RemediMaker without discussing cost savings. Costs for in-situ treatment are a fraction of other options. Companies will find that remediating multiple sites is possible for the equivalent budget of one site using conventional excavation methods. Third-party lab tests confirm both oil and produced water-treated soil contamination improved by over 80% in about 2.5 months. Costs typically come in less than half of conventional methods.

RemediMaker is at the helm of mitigating environmental impacts in several arenas. With this treatment, overall emissions are reduced by about 90%. RemediMaker treatments have a significantly small carbon footprint. Common logistics of trucking soil contamination to a landfill contribute to climate change, especially since diesel trucks are major emitters of carbon dioxide, and dozens of truckloads are typically needed. In addition to the noise and emissions from trucking, the increased vehicle traffic is inconvenient for residents and can be harmful to wildlife. By contrast, one application of RemediMaker may be all that is needed, and this can be accomplished in as little as one truck. Treatment is available to scale, with options for pails, barrels, and truck loads.

### A vision for the future

Vande is a small organisation that is growing rapidly. Our product was designed for generations of today and tomorrow. We believe that oil and gas have an important role that needs to be continued, and RemediMaker was designed to assist our industry in both production and accountability. Stakeholders ranging from energy providers to energy users all deserve a fair, environmentally friendly, economical, and easy solution for contaminated soil. Offering a remediation solution for fractions of conventional remediation costs provides stakeholders

an opportunity to reach environmental targets quickly and efficiently.

This is not a conceptual product. It is actively being used today by the construction, mining, equipment and energy industries. After over a decade of research and development, field testing and third-party verification, the product has seen a successful launch in Canada and the US. The ease of application and positive remediation results have been introduced to multiple government agencies as of this printing, though the acceptance of soil remediation treatments by government authorities is a multi-step process that can span many years. High levels of government approvals have been obtained for RemediMaker treatments. The West Virginia Department of Environmental Protection (DEP) endorses RemediMaker. The Legislative Energy Committee recommends RemediMaker. The Alberta Energy Regulator (AER), Ministry of Energy and Resources (MER), and Oil and Gas Commission (OGC) all allow RemediMaker treatments (provincial governments are unable to endorse or recommend any company or product at all). The US Federal Department of Energy encourages RemediMaker. Although semantics differ between countries and agencies, RemediMaker government support is apparent.

To summarise, this solution offers the following:

- Significant cost savings
- Ease of use
- 6-8 weeks to eliminate the hydrocarbon(s)/salt(s)
- Non-toxic, non-hazardous
- No microbials left behind


In conclusion, spray-on soil remediation treatments offer a groundbreaking solution for soil remediation, delivering exceptional results with minimal disruption. Their ease of use, cost-effectiveness, and non-toxic composition make them a smart choice for anyone looking to address contamination without the environmental and financial burdens of traditional methods. For both large-scale industrial sites and smaller, localised spills, quick, efficient treatment is a step toward cleaner, healthier soils. With government endorsements and proven success across multiple industries, now is the time to embrace the future of remediation. 



Figure 3. Pilot test shows dramatic, 24-hour improvement.