Production Waste Management

Converting oily sludge, slop oil and off-spec crude oil from an environmental liability to income
Reducing risk and recovering valuable resources are the drivers behind the M-I SWACO* production waste management service. Our knowledgeable and experienced chemists and engineers understand the complexities of dealing with production wastes and can provide you with a single process or a combination of solutions to efficiently and effectively manage even the most complex production waste problems. M-I SWACO can help you generate revenue, eliminate future liability, safeguard the environment, and protect workers' health and safety.

Knowledge and expertise to address complex problems
- Comprehensive portfolio of products and services
- Experienced chemists and engineers strategically located around the world
- Knowledge of chemical composition and physical characteristic variations that is second to none
- Comprehensive analysis techniques
- Solutions — often unique and always reliable

Global network of scientific and technical capabilities
- Operations in every oil-producing country in the world
- Research and technology centers in Houston, Aberdeen and Stavanger
- Comprehensive regional laboratories
- Laboratory analysis and test equipment ready for mobilization to any location
We can help you get maximum recovery from your oilfield waste, wherever you are

**APPLICATIONS**
Operations that generate or experience oil/water emulsions, vessel interfaces, process upsets, well-testing fluids, tank-bottom sediments and off-spec crude oil. Prime candidates include slop-oil from the crude dehydration processes and oily sludge that have accumulated over time and have become stable, viscous wastes.

**PROBLEMS**
Oily wastes are often dumped into pits or tanks where aging and weathering convert them into viscous sludges, further complicating the treatment solution. Untreated waste creates environmental liability and often is a source of unrealized revenue.

**SOLUTIONS**
M-I SWACO has the in-house knowledge, experience and worldwide operational presence to design, supply and operate mechanical and chemical process solutions for any sludge treatment or pit cleanup challenge.

**ECONOMICS**
In many cases, untreated oily sludge represents unrealized revenue because of its significant hydrocarbon content. M-I SWACO can not only treat the oilfield waste, but can often convert it to profit by efficiently recovering valuable oil.

**ENVIRONMENTAL**
Spillage, seepage and managed deposition create environmental issues that require remediation. The consequences of leaving waste untreated compound over time and can negatively affect workers’ health and safety as well as the physical environment.

Oilfield waste is a fact of life in the oil and gas industry. It is impossible to drill, produce, store or refine hydrocarbons without creating waste that, in many cases, requires specialized treatment prior to disposal. Our experienced specialists can mobilize laboratory analysis and test equipment to any location to evaluate specific problems.

M-I SWACO understands the complexities of dealing with production wastes. We can provide you with a single process or a combination of solutions to efficiently and effectively manage even the most complex production waste problems, and we will provide solutions for treatment or disposal of the solids and water that remain.

We are the only company with the global resources and experience to remediate oilfield wastes that can vary significantly in composition and characteristics. We have operations in every oil-producing country in the world and hold an extensive portfolio of production waste management solutions.
Success stories from around the world

Colombia

Integrated system reduces solids disposal by 75%

The operator’s oil production field in Colombia used a jet pump for lifting, thus generating a strong, oil-water invert emulsion stabilized by organic compounds. Traditional production water treatment did not meet environmental requirements, could not process large water volumes and generated high volumes of hydrocarbon-impregnated flocs. The resultant water quality was not within specification.

M-I SWACO designed a system for the customer that integrated equipment and treating chemicals to process more than 550,000 bbl of fluid with the final solids disposal reduced by more than 75%. Discharge water showed significantly decreased turbidity, suspended solids and oil-in-water values. In addition, more than 2,600 bbl of commercial hydrocarbons were recovered.

Trinidad

Operator recovers 50,000+ bbl of crude in eight months

A crude oil terminal in Trinidad was creating up to 1,500 bbl/day of slop-oil waste by using traditional techniques of chemical dehydration and settling time. The slop was being formed at the problematic oil-water-solids interface between the separated crude oil and the free water.

M-I SWACO used simulation and characterization techniques to design a mechanical-chemical separation system with two stages of centrifugation to split the slop-oil emulsion. The system is flexible enough to treat both fresh slop oil from daily production as well as the aged slop oil from storage tanks without reconfiguring the process.

In the first eight months of operation, the M-I SWACO system recovered over 50,000 bbl of clean crude oil and returned it to the client.

U.S.A.

New facility recovers 54% useable oil on startup

A new slop-oil recovery project had to be the “best in class” to recover useable oil from local industry waste steams and turn this into a revenue stream amid price-sensitive market conditions. The customer approached M-I SWACO to assist in up-front engineering, design and chemical testing, and to provide field-proven equipment.

M-I SWACO delivered a three-phase slop-oil-recovery system consisting of equipment, chemicals, and engineering and design that achieved positive cash flow within days of startup. To date, more than 54% of the overall slop volumes being treated have been separated and sold as a revenue stream, setting the customer apart in this highly competitive market. M-I SWACO continues to assist with project management to ensure quality, safety and environmentally sound operations.
Production waste management project nets $500,000 for operator

In some cases, the M-I SWACO oil sludge treatment solution has not only paid for itself, but has generated significant profit from reclaimed hydrocarbons.

A major operator had an open pit of 300,000 bbl of viscous sludge that needed treatment and disposal. A compromised geomembrane liner in the pit had allowed hydrocarbons to leach into the soil, and the company was facing internal and external pressure to find a solution to the problem.

Previously, other contractors had failed to treat the sludge, using standard separation systems based on centrifuges and chemical demulsification. The result of the failed efforts was an even greater environmental liability.

Faced with this rapidly escalating problem, the operator turned to M-I SWACO production waste management specialists, who carried out extensive sludge sampling and analysis. Test results showed the sludge comprised complex oil and water emulsions chemically bound by metal-carboxylate soaps and included several mixtures of stabilizing fine sand, scale and wax.

In response to the findings, M-I SWACO engineers designed both the mechanical system and a specific program of chemical surfactants and strong demulsifiers that was able to break the sludge into its constituent components of oil, water and solid particles.

The first step of the process screened raw sludge to remove large debris, then applied heat before homogenizing it for chemical injection. Continuous, careful analysis ensured the dosing rate was controlled for each sludge batch.

Once the sludge was processed, it was allowed to settle so the clean bulk phases of oil and water could be removed. Centrifuges resolved the residual oil/water/fine-solids interfaces, producing clean outlet phases that met the client’s process-quality specifications.

This solution not only paid for itself, but generated more than $500,000 profit. Now M-I SWACO manages and monitors every component of the contract, meeting all of the client’s specifications as well as the national legislation requirements for QHSE. The M-I SWACO solution allows sludge to be treated as it is generated. Continuous processing has eliminated the operator’s environmental liability and continues to generate a significant profit.
Our knowledge, experience and worldwide presence give you the assurance you want

**Upstream emulsion/slop-oil treatment**
- Elimination of slop recirculation improves the efficiency of crude oil dehydration
- Recovering tank space optimizes production operations, producing additional revenues for the operator
- Minimization of environmental liabilities and reduction of waste storage/disposal responsibilities
- Recovering export-quality crude oil from reject streams

**Slop-oil-pit treatment**
- Customized treatment maximizes crude oil recovery
- Maximized crude oil recovery from waste offsets the cost of reducing environmental liabilities
- Operator can continuously process sludge, resolve environmental liability concerns and potentially generate a significant profit

**Produced-water treatment**
- Customized solutions remove contaminant components in produced water
- High-volume water treatment can increase crude-oil production
- Overall cost savings by reducing daily wastes and environmental liabilities

A global network of scientific and technical capabilities for expedient analysis and immediate solutions

The key to accurate process design is applying comprehensive analysis techniques and competently executing their application. At M-I SWACO, we realize that technology selection and performance parameters must match environmental regulations as well as the customer’s demands for process quality and QHSE compliance.

In the oil and gas business today, only M-I SWACO has the in-house knowledge, experience and worldwide operational presence coupled with a comprehensive portfolio of solutions. And we understand the intricate processes that are critical to the successful resolution of sludge and slop-oil waste problems.

We have experienced chemists and process engineers regionally based and ready to mobilize to any site. In addition to our comprehensive regional laboratories, we have portable test kits to analyze sludge onsite. Supporting this field-based capability are our Research and Engineering Center in Houston, the Research and Technology Centre in Aberdeen and our Technology Center in Stavanger.
Production waste treatment can generate revenue

Reducing risk and recovering valuable resources are the drivers behind the M-I SWACO production waste management service. We will help you uncover the growing potential for recovering real economic value from oil-sludge treatment. Efficiently treating this sludge addresses the initial environmental problem and helps eliminate future liability, but the benefit of efficient treatment is not limited to safeguarding the environment. Recovering oil from waste sludge can generate significant revenue.

Keep your oily sludge and slop oil from going to waste

Call your M-I SWACO representative and ask about our production waste management services to see how we can help you turn a liability into an asset.