

These processes result in the safest method of sludge reclamation with no manned entry to the tanks; this alone has enormous implications in the petroleum industry. A treasured slogan at PMI is *"All of our people go home to their families"*. We are a family and environmentally orientated company, putting people and the environment first! Using the environmentally-friendly formula PMI-T4 and some very resourceful piping and pumping processes, we can expand the technologies into remediation on pre-existing sludge depositories, consisting of ponds/lagoons, desert landfills and even some of the petroleum accident sites.

'We are able to do in days what used to take weeks and months to accomplish!'

Reduced time	<ul style="list-style-type: none"> • Up to 80-90% reduction in tank cleaning time (compared to manual) • Shorter overall tank down-time (over conventional)
Minimal environmental impact	<ul style="list-style-type: none"> • Near 100% recovery of hydrocarbons and it is ready to be sent down pipeline to be refined and sold • Minimal waste disposal necessary • Minimal hydrocarbon emission to atmosphere due to our closed-loop cleaning system and the tank is de-gassed into the solution • Lower consumption of water, electricity and air
Cleaning result	<ul style="list-style-type: none"> • Unique Petroleo vortex solution pattern covers complete tank interior area • Re-circulation of cleaning media during recovery process • Tank is de-gassed and completely safe to enter
Safe cleaning process	<ul style="list-style-type: none"> • No staff inside tank during cleaning process (non-man entry system) • Continuous monitoring and automatic pump shutdown features • No risk of explosion • Minimal health and safety risks to onsite staff
Personal safety	<ul style="list-style-type: none"> • No staff inside tank during cleaning process (non-man entry system) • Minimal health and safety risks to staff • Safety certified and trained operators
Easy maintenance	<ul style="list-style-type: none"> • Easier tank maintenance after cleaning the tank is fully operational and up- to peak performance level
Follows legislation	<ul style="list-style-type: none"> • Designed for present and future environmental, health and safety regulations
Highly flexible	<ul style="list-style-type: none"> • Modular system can be tailored to customer needs • Expandable, as customer needs change
Lower costs	<ul style="list-style-type: none"> • Overall tank cleaning costs reduced – Call our team today to see the cost/benefits analysis which is very economic to today's market place

'This is an actual case that the PMI chemical was utilized on with amazing results!'

This is an actual documentation received after performing injections at a well known Middle Eastern gas plant. By using a simple chemical injection procedure, we mobilized up to a 100% of the waxy sludge from the bottom of the tank and sent it to the refinery as oil. If you look at the before and after pictures you will see that with some innovative solutions and the amazing PMI chemical we adapt solutions very easily and effectively. The 300,000 barrel tank had 10% tank bottoms present months before we started and 0% when we finished, this means there was 30,000 barrels + or - of the sludge we cleaned out of the tank in 2 weeks of injections. BSW and Corrosion were reduced to near 0%! When we use our whole system you get a much more efficient job and we can make the tank safe for entry for inspections, service or repairs. For normal operations and years of unnecessary manual cleaning this the most cost effective and efficient method of mobilizing your sludge and turning it into a solution for your company!

Contact Us At!

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Pipeline Maintenance International



**Safe & Cost effective
Tank Solutions**

TANK CLEANING

With the lower oil prices and the high cost to produce, it is more important than ever to have no accumulation in any of our systems. Crude Oil Tanks used for production collection, at the production facilities or your Export Tanks, are notorious for Sludge build up. Almost all companies have had or are experiencing these problems and the industry is plagued with this problem.



“Results are amazing with PMI !”

Sludge Oil



Sludge builds up, over time, in crude oil storage tanks, reducing operating capacity and damaging critical infrastructure. Tank sludge removal procedures until now have been both costly and dangerous.

Petroleum tank owners have had several options for sludge removal in the past. The oldest practice is to utilize in-expensive local labor to physically remove the sludge, a dangerous and time-consuming task, involving removing the tanks from active use for a period of months. This technique also requires the physical removal of the sludge waste product, which often finds its way into poorly constructed landfills where, even today, it is leaching into groundwater and neighboring soils.

The second option was to hire a highly specialized cleaning crew using high tech mobile pumping and filtering stations. This option can cost millions of dollars, even though it does return approximately 90% of the sludge to the owner as usable petroleum and hydrocarbon solids.

Sludge oil is the floating oil and solids that accumulate on the surface of an oil-water separator. Sludge oil or secondary oil is found in evaporation ponds, sludge pits, storage tanks, and permitted commercial disposal facilities and is a potential environmental disaster. Current options for disposal are expensive or have limited success.

This leads to sludge oils being stored in pits or tanks or wherever possible until a better solution presents itself.

PMI's technology is timely, given the environmentally sensitive market, as well as the cost implications for the disposal of residual oil production and hydrocarbon waste.

Advanced research and technology is the answer. Given our research and field experience with the technology we are able to treat these materials by mobilizing the hydro carbons in the sludge and making the process pay for itself.

“Our process is environmentally friendly”

We work with clients and government to provide a unique service for the petroleum industry and the environment. We have a proven track record in the recovery and recycle of these secondary or sludge oil materials.

The options currently available for disposing of sludge oil materials are as follows:

- 1) Sending sludge oil materials to a permitted commercial disposal facility charging expensive disposal rates (up to \$30-72 per barrel plus trucking and standby charges).
- 2) Investing in and developing expensive equipment to attempt to self-recover oil (not very efficient).
- 3) Spreading sludge oil materials on roads (not environmentally friendly).
- 4) Storing these sludge oil materials in tanks and pits (only a temporary solution).

Incineration or disposal of sludge oil is a huge cost to the petroleum industry. These costs are continuous - year in and year out, as long as there is sludge oil to be disposed of.

Recovering the oil not only reduces costs but can also create a profit. That profit will depend on the amount of recoverable oil, and the efficiency of the equipment used, which is why PMI's systems exists, it was created to address the problems identified in the petroleum industry.

We are capable of cleaning your crude oil tanks whether they are offline and in most cases online. Having options is a must that is dependant on tank schedules, severity, costs, location, time etc. We are able to help create the optimal answer for your needs.

TANK SLUDGE MOBILIZATION (ONLINE METHOD)



- a. An infrared image is taken of the tank, revealing the amount and placement of the crude oil sludge. This image will be used for before and after comparisons of the tank's condition.
- b. We determine an access point for doing a chemical injection, usually as far upstream on the incoming pipeline as possible. We can utilize an existing chemical dosing unit or install our own, mobile system that we adapt for use, (with supplied power or remote).
- c. Depending on the flow rate of the pipeline, tank size, amount of sludge build up and time allowed, we would vary the dose rate accordingly.
- d. The tank is pumped of all the pump able oil.
- e. The dosing pump is started at the predetermined dose rate.
- f. The first 2 days we do a heavy dosing to allow for the wetting action and the filming action of the chemical.
- g. We vary the dosing rates to allow for the allowable wax in oil that is approved by management. This will be monitored on a continuous schedule by Thermal Imaging at predetermined times.
- h. We dose the PMI-PL11 till the sludge in the tank/s are at the acceptable levels.
- i. The mobilized sludge will resuspend in the cutter stock oil and travel right to the end user with out dropping out or having any negative down stream effects.
- j. We set up a permanent maintenance program to eliminate these build ups from reoccurring.

