

PRA[®]

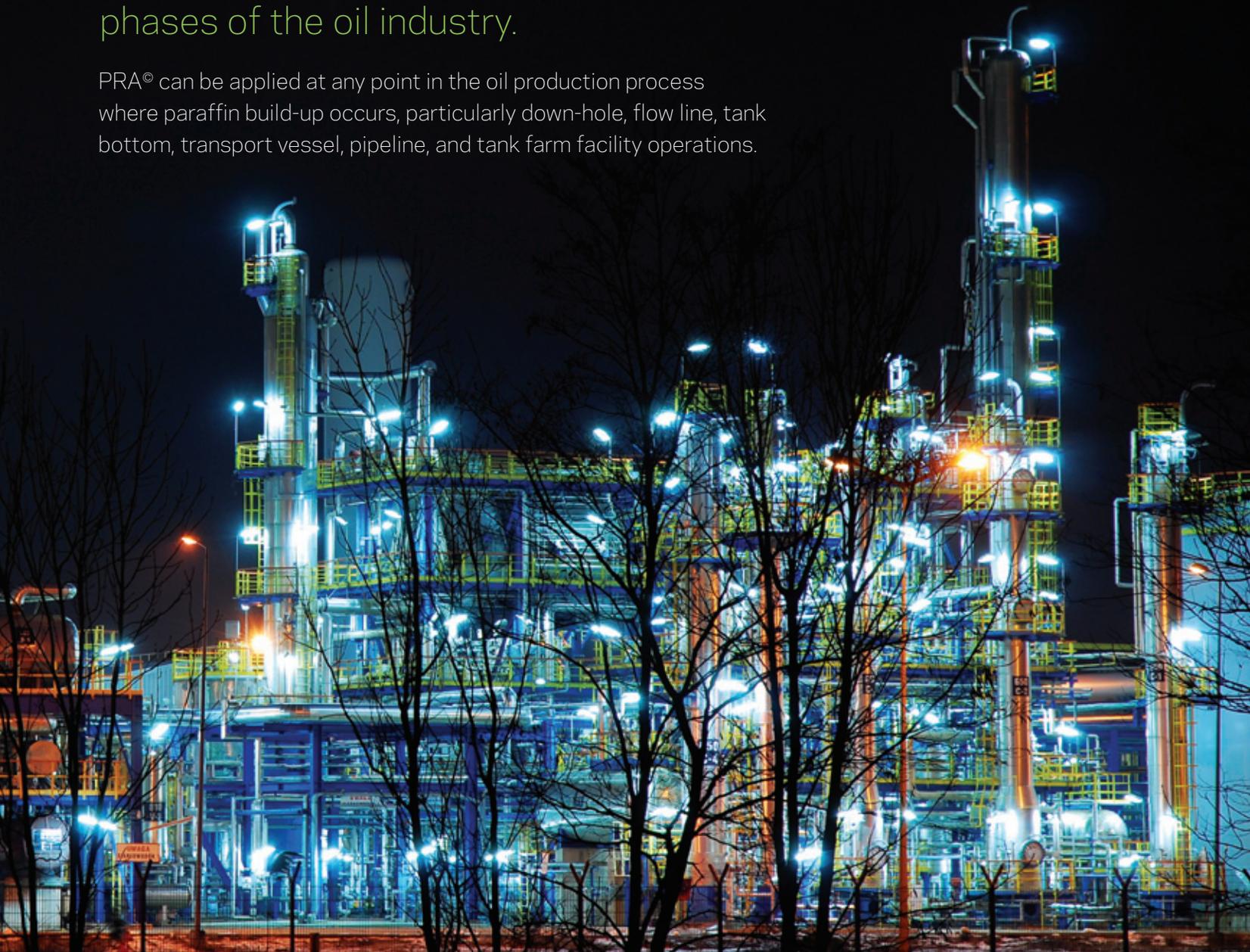
Petroleum Remediation Additive





PRA[®] Petroleum Remediation Additive is a non-flammable and non-toxic petroleum and paraffin-removal treatment for use in all phases of the oil industry.

PRA[®] can be applied at any point in the oil production process where paraffin build-up occurs, particularly down-hole, flow line, tank bottom, transport vessel, pipeline, and tank farm facility operations.





Plutus PRA[®] Overview

- Plutus PRA[®] removes wax accumulation downhole in perforations, pumps, tubing and rods.
- Plutus PRA[®] targets asphaltenes and paraffin accumulation in production operations, pipelines tankers and storage batteries.
- Plutus PRA[®] returns the paraffin to the oil phase of the crude without changing the grade of the crude.
- Plutus PRA[®] reduces the frequency required for scraping and pigging subsea pipelines.
- Plutus PRA[®] improves viscosity of crude oil even in cold water and climate conditions.
- Plutus PRA[®] quickly kills algae and mould growth in fuel storage tanks.
- Plutus PRA[®] drops water out of suspension in both diesel and gasoline without lowering the BTU quality of the fuel.

PRA[®] is applied to paraffin build-up with adequate amounts of good crude oil and agitation. PRA[®] breaks down the paraffin, causing the paraffin in the oil to go into solution, staying in solution with the good crude until refining takes place. Basic substances and solids will be suspended with agitation and/or circulation, and can then be easily pumped off. This process may also be applied to saltwater disposal systems. Not only does the process work effectively, it is also one of the most cost-effective treatments available to industry.

PRA[®] is at least three to five times more efficient, on a volume basis, than any other known paraffin dispersant. Once dispersed and dissolved, the paraffin remains dissolved (when PRA[®] is properly applied). PRA[®] has been proven to work where solvents and other products have not or could not.

Heavy crude oil viscosity losses of up to 90% have been observed. When PRA[®] is applied to producing wells, it disperses paraffin deposits as well as scale-like deposits which occur in the well bore, perforations, and pump during down hole operations.

In addition to eliminating paraffin build-up around the tubing and pumping components, existing and future deposits will also be eliminated and prevented from accumulating in the flow lines and separators when PRA[®] is added via a drip or injection system. PRA[®] also keeps the heat-treater operating more effectively by reducing internal build-up.

By lowering the oil viscosity, there is an increase in the amount of well flow. This provides improved above-ground handling as it lowers costs because the oil needs less heating to make it flow.

By keeping the paraffin build-up low, there is a reduction in the pressure increases normally resulting from the plugging of formations. Improved overall well production is obtained by maintaining an improved degree of internal well cleanliness. By adding PRA[®] to down-hole operations, it is possible to increase the effectiveness of scale and corrosion inhibitors and keep waxy deposits out of water-handling facilities.

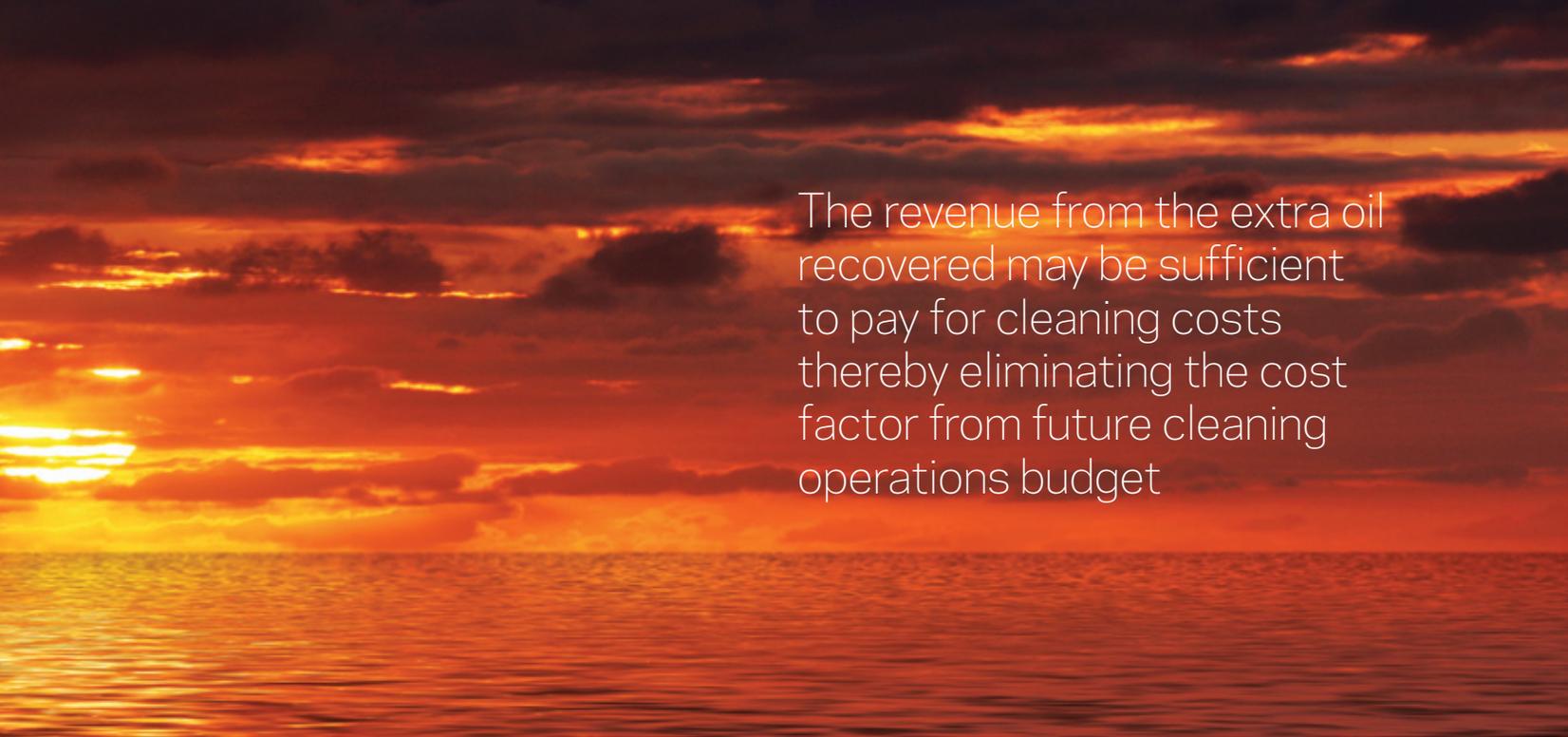
Subsea and Offshore Wells

Use of organic solvents in sub-sea flow lines especially in deep water has never been efficient. The generation of paraffin crystals are caused by the initial temperature of crystals with the lightest temperatures at which the solid phase in the oil is first initiated. Any oil submitted to a previous thermal treatment at a controlled cooling rate will result in paraffin problems. The best way to prevent paraffin problems is by injecting PRA[®] continuously on a daily basis. This will avoid the use of expensive mechanical methods such as pigs, scrapers, knives, hot oil, and organic solvents.

Paraffin Applications

Removing paraffin deposits by circulating cold organic chemicals sometimes means having to replace costly flow-lines to facilitate a return to acceptable production. This type of process can be detrimental to various types of sub-sea flexible flow-lines. The following methods are proven applications for PRA[®] resolving paraffin problems:

- PRA[®] should be added to storage tanks at the rate of 2-5% of the sludge build-up.
- PRA[®] should be applied to producing wells at the rate of 1 US gallon per 100 feet of well depth.
- PRA[®] should be injected into pipelines at 100ppm.
- Using heat and blending PRA[®] with brine water will give positive results.
- Using heat and blending PRA[®] with brine water, crude oil, and the best agitation possible will enhance the chemical reaction.
- Using heat and blending PRA[®] with the mother crude oil and circulating through system is highly effective.



The revenue from the extra oil recovered may be sufficient to pay for cleaning costs thereby eliminating the cost factor from future cleaning operations budget

When PRA[®] is added to the pipeline operations, it enhances the overall effectiveness of the corrosion inhibitors and reduces the scheduled number of line scraping operations over a given period of time. This results in reduced pipeline repairs as a result of build-up problems and increases the flow of oil, while keeping the pipeline from accumulating additional and potentially harmful paraffin deposits in the future.

Reclamation Operations

PRA[®] can be used as a cost-effective solution for waste pits, tanker bottoms and storage facilities at tank farms. PRA[®] can be effectively used to recover any appreciable paraffin or heavy ends contained in the sludge (BS&W), which can then be recovered and sold, either for profit or to help offset the costs of cleaning operations. The revenue from the extra oil recovered may be sufficient enough to pay for cleaning costs, thereby eliminating the cost factor from future cleaning operations budget.

PRA® - Usage Guidelines



This non-hazardous product is formulated to solve a variety of problems unique to the oil and transportation industries.

- Plutus PRA® removes wax accumulation down-hole in perforations, pumps, tubing and rods.
- Plutus PRA® targets asphaltenes and paraffin and accumulations in production operations, pipelines tankers and storage batteries.

- Plutus PRA® returns the paraffin to the oil phase of the crude without changing the grade of the crude. Plutus PRA® reduces the frequency required for scraping and pigging subsea pipelines.
- Plutus PRA® improves the viscosity of crude oil even in cold water and climate conditions.
- Plutus PRA® quickly kills algae and mould growth in fuel storage tanks.
- Plutus PRA® drops water out of suspension in both diesel and gasoline without lowering the BTU quality of the fuel.

Uses for Plutus PRA®

Plutus PRA® is an effective cleaning solution for use in a variety of commercial and industrial processes, especially in:

- Down-hole paraffin problems
- Petroleum and crude pipelines
- Oil and fuel storage tanks

Plutus PRA® is cost and time effective for remediation of clogged and kinked pipelines.

PRA[®] - Application Instructions

Downhole Situations

Note: Before beginning any treatment process, make sure all Safety Guidelines and Procedures are in place. If in doubt about correct procedure, check with Safety Officer or OSHA before proceeding. Plutus Environmental Technologies Inc. or its associated or subsidiary companies shall not be held liable or at risk for any safety violations or errors by the user.

Step 1

Apply Plutus PRA[®] down the annulus at an initial rate of 1 US gallons per 100 ft of well depth to 8000 ft. Wells deeper than 8000ft. should receive 1.5 US gallons per 100ft of total depth. Combine with crude from the well if desired. Do not add refined hydrocarbons. Greater volume may be required based on severity of paraffin accumulation.

Step 2

Allow Plutus PRA[®] to circulate overnight if possible to clean pump and tubing or at least for two complete rotations of tubing volume. The wax will recombine with the oil and stay in solution until the refining process occurs.

Step 3

Perforations usually open when Plutus PRA[®] is allowed to stand for a period determined by the severity of the build-up. 24 - 48 hours is normal.

Step 4

If an unacceptable amount of build-up still remains repeat steps 2 - 4 until satisfactory.

Note: regular use of Plutus PRA[®] will lessen the frequency of downtime and maintenance.

Pipelines

Step 1

Plutus PRA[®] should be injected into the pipeline as far upstream as possible. Injected volume will depend upon severity of wax build-up in the pipeline.

Step 2

PRA[®] treated pipelines from production facilities will have less build-up than from untreated wells. Pumps stay clean and valves function properly. Less pressure may be needed to move product.

Step 3

Subsea and cold climate pipelines have less friction when treated with Plutus PRA[®]. Pigging or scraping problems are eliminated or reduced in kinked lines.

Barges, Tankers & Storage Batteries

Step 1

Plutus PRA[®] should be added to 'dirty' tanks at 2 - 5% of the volume of the sludge accumulation.

Step 2

Circulate Plutus PRA[®] in storage tanks if time and storage conditions allow. Circulation will separate wax from the sludge. The wax will re-enter the oil phase of the crude without change in the grade of the crude. Add water when the tank is pulled down for scheduled maintenance. The bottoms may then be pumped off with little or no hydrocarbons remaining.

Step 3

It is not necessary to take barge or tanker compartments out of service. Normal current movement within the oil will serve to circulate the Plutus PRA[®] and reduce sludge or wax volume.

Fuel Storage Tanks

Step 1

Plutus PRA[®] should be added to diesel or gasoline tanks at 2-5 US gallons per 5,000 gallon of tank capacity.

Step 2

Circulate Plutus PRA[®] to kill algae and mould or to break suspensions. Circulation will cause solids and water droplets to fall out of suspension. Drawdown is not required. Fuel quality and BTU value will increase. Effective treatment time is generally within 24 hours.



For individual advice and support contact Plutus Environmental Solutions via our website:

www.plutuses.com

email: info@plutuses.com

or phone: (+44) 01522 694445

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form) Form Approved OMB No. 1218-0072

Identity (as used on Label and List)

PRA[®] Petroleum Remediation Additive

Note: Blank spaces are not permitted. If any item is not applicable or no information is available, the space must be marked to indicate that.

Section I - Manufacturer's Information

Manufacturer's Name

Plutus Environmental Technologies, Inc.

Emergency Telephone Number

++1 (865) 453-0060

Address (number, Street, City, State and Zip Code)

807 Mize Lane

Sevierville, Tennessee 37862-3027

USA

Telephone Number for Information

++1 (865) 453-0060

Date Prepared

Updated 01 September 2004

Signature of Preparer (optional)

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))

OSHA PEL

ACGIH TLV

Other Limits Recommended % (optional)

None; Proprietary blend of surfactants and organic solvents in aqueous solution; contains 4.5 ppm Orcoacid Ortofast Turq for identification.

Contains no HAP, ODC or NP surfactants.

Section III - Physical/Chemical Characteristics

Boiling Point

H₂O = 100°C

Specific Gravity (H₂O = 1)

1.04 - 1.27

Vapour Pressure (mm Hg)

N/A

Melting Point

N/A

Vapour Density (Air = 1)

N/A

Evaporation Rate (Butyl Acetate = 1)

N/A

Solubility in Water

Infinite

Appearance and Odour

Clear blue colour; none to light citrus odour

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)

None

Flammable Limits

N/A

LEL

N/A

UEL

N/A

Extinguishing Media

N/A

Special Fire Fighting Procedures

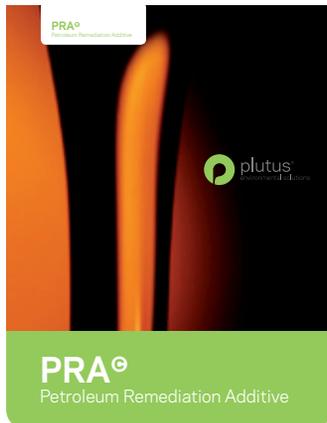
None

Unusual Fire & Explosion Hazards

None known

Section V - Reactivity Data									
Stability	Unstable		Conditions to Avoid						
	Stable	X	None known, unless water is evaporated; if all aqueous phase is evaporated, components will completely volatilize.						
Incompatibility (materials to Avoid) Hydrocarbon-based substances; aluminium; silicone			Hazardous Decomposition or Byproducts None known		Hazardous Polymerisation	May Occur		Conditions to Avoid	
						Will Not Occur X		N/A	
Section VI - Health Hazard Data									
Route(s) of Entry No	Inhalation? No	Skin? No	Ingestion? May cause diarrhoea	Health Hazards (Acute & Chronic) May cause diarrhoea if volume ingested		Carcinogenicity No	NTP? No	IARC Monographs? No	OSHA Regulated? No
Signs and Symptoms of Exposure Hands may redden if immersed for several hours			Medical Conditions Generally Aggravated by Exposure None Known		Emergency & First Aid Procedures If ingested, drink quantities of fresh water; DO NOT INDUCE VOMITING. Flush eyes with water or saline solution. Call physician if irritation persists.				
Section VII - Precautions for Safe Handling and Use									
Steps to be taken in case Material is Released or spilled Mop up or use absorbent material; dispose in trash. Rinse surface thoroughly and apply local safety/spill clean-up measures as needed or required.			Waste Disposal Method May be safely poured down the drain.		Precautions to be taken in Handling and Storing None Known		Other Precautions Personal Protective Equipment (PPE) is not required. Safety goggles are suggested when using this product or any other chemical product.		
Section VIII - Control Measures									
Respiratory Protection (Specify Type) N/A; contains no VOCs		Ventilation	Local Exhaust None Needed	Special None Needed					
			Mechanical (General) N/A	Other None Needed					
Protective Gloves Not required	Eye Protection Suggested with use		Other Protective Clothing or Equipment As needed or required by work site policies and procedures.		Work/Hygienic Practices Avoid excessive exposure.				

Products available from Plutus® Environmental Solutions



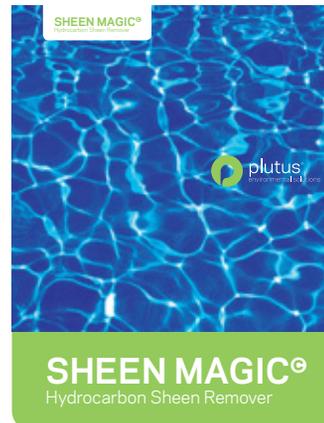
PRA® Petroleum Remediation Additive is a non-flammable and non-toxic petroleum and paraffin removal treatment for use in all phases of the oil industry.

It removes wax accumulation downhole, targets paraffin and asphaltene accumulations, returns paraffin to the oil phase of the crude, kills algae and mould and all without lowering the btu quality of the fuel.



E-SAFE® Environmentally-Safe Cleaner is the best product for hydrocarbon removal available. It is effective in all areas of remediation.

It is used for the remediation of soil contaminated by fuel spills, petrol, gasoline or diesel by breaking down the hydrocarbon into smaller compounds which become nutrients or food for naturally occurring bacteria in the soil.



SHEEN MAGIC® rapidly and safely restores streams and lakes to pre-contamination quality. The formulation removes oil sheens normally associated with hydrocarbon spills, breaks down the hydrocarbon into smaller compounds which become nutrients or food for naturally occurring bacteria in the water.



BILGE-BRITE® is an environmentally safe solution for remediating hydrocarbon contamination of bilge in maritime and large leisure craft.

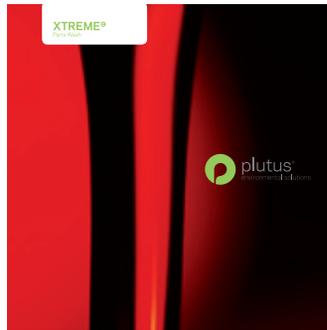
It is effective in all areas of hydrocarbon remediation and is used for the treatment of bilge contaminated from hydrocarbon drips, leaks or spills of lubricants, bunker oil, gasoline, petrol or diesel.



OWS®

Oil and Water Separator Additive

OWS® speeds the breakout of oil from water in separator units, retards foaming and odour and decreases sludge build-up for reduced maintenance. Hydrostatic bonding of the oil and water mix in separator units retards oil breakout - OWS reduces this bonding, increases oil breakout and results in drier oil and clean water.



XTREME®

Parts Wash

XTREME® Parts Wash is designed to remove heavy grease and oil from industrial coatings, fabrication processes, paint line residues and light rust.

It increases biological activity in industrial waste streams and kills bacteria, fungus and microbes on treated parts and in equipment systems.



For more information on any of the products featured here and for an individual brochure download from www.plutuses.com, email: info@plutuses.com or call Plutus Environmental Solutions on **(+44) 01522 694445**.



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