

World DREDGING

M i n i n g & C o n s t r u c t i o n

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Jan De Nul Group executed 33.4% of the total dredging works for the new Suez Canal in Egypt. Seven cutter suction (CS) dredges, including the vessel Kaerius with a total installed diesel power of 8,330 kW were mobilized by JDN. (See story on pg. 6)

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TOTAL COST of OWNERSHIP

How the Advantages of Choosing Biodegradable Lubricants for Your Operations Positively Effects TCO

Lubricant users are directly responsible for their actions, or lack thereof, and the type of fluids they choose for their operations is one of them. There are a number of different lubricant basestock choices available in the marketplace and many users are choosing to integrate biodegradable lubricants where they can to reap the numerous benefits of doing so. When an organization takes the proper steps in selecting the right biodegradable lubricant for a specific application, they can be confident that they are switching to a high performing bio-based lubricant that oftentimes outperforms the traditional fluids they were previously using, while at the same time lowering their Total Cost of Ownership (TCO).



The choice of lubricants for dredging projects are increasingly important as to environmental impact.

Total Cost of Ownership = P + R + E + R + B + P
(*Performance + Reliability + Environmental + Risk Mitigation + Brand Impact or PR + Price*)

Performance

Maintaining the effective performance of equipment at the lowest possible cost is key in any business. Operational uptime must not be jeopardized and proper lubricant selection is critical. Many businesses choose to stay on familiar turf by using the same conventional petroleum or synthetic lubricants they have always used. In the last decade, it has become clear that a properly engineered biodegradable lubricant offers superior performance in the field and offers distinct performance advantages vs. conventional petroleum products:

- Naturally High Viscosity Index
- Superior Lubricity Performance
- Very High Flash Points
- Superior Cleansing Ability
- Powerful Metal Polarity
- Very High Dielectric Strength
- Green & Sustainable Technologies
- Lowest Total Cost of Ownership

A common misconception in the marketplace is that the use of biodegradable lubricants results in a performance deficiency. However, numerous case studies and field use has proven this not to be the case. The advancements in biodegradable basestock and additive technologies over the last decade have resulted in products that perform exceedingly well, and sometimes much better than their conventional lubricant counterparts, in many applications.

Reliability

A common question surrounding the reliability of biodegradable lubricants is: Will they biodegrade in my equipment? This is simply not the case because lubricant systems lack the components necessary (soil, water, microbial activity, oxygen, and heat and/or UV radiation) for the biodegradation process to occur.

Sam Burkett, president of BioBlend Renewable Resources states, “BioBlend biodegradable lubricant technologies have been in the field for the last 15 years. As a manufacturer, we understand our products must exceed the performance and longevity requirements of our customers, while at the same time being compatible with the petroleum products they currently have in use to allow for an easy transition. Biodegradable lubricants do not react or cause problems with conventional petroleum or synthetic fluids, conventional seals and seal materials, or hoses. In most circumstances, a simple drain and fill of the system is all that’s required to switch to BioBlend products immediately.”

For more details ask for BioBlend’s white paper: ‘BBWP-A Guide to Converting to BioBlend Lubricants.v2.pdf’

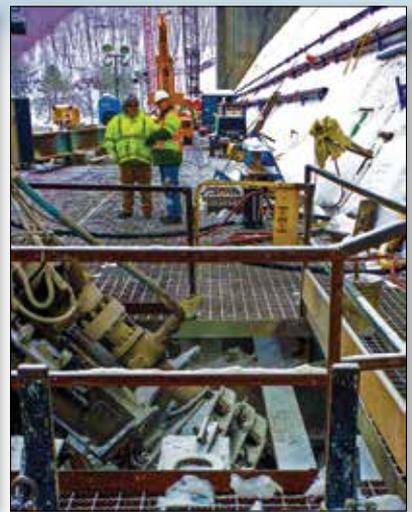
Ask for BioBlend’s synthetic lube comparison example: ‘BioFlo HEES Synthetic Biodegradable Hydraulic Fluid vs. well known major oil company synthetic hydraulic fluid’

Environmental

Many lubricant consumers look to biodegradable options based on their organizational sustainability goals, bid requirements, risk mitigation objectives or other factors. Biodegradable lubricant manufacturers accommodate these needs by formulating superior products that encompass measureable environmental parameters and meet stringent performance standards.

The following factors should be considered when evaluating a lubricant’s environmental attributes:

Biodegradability – To meet the highest environmental standards, a product should be READILY BIODEGRADABLE, meaning >60% will biodegrade within 28 days if introduced into the environment.



A number of BioBlend products are being utilized at the US Army Corp of Engineers Bluestone Dam project in Hinton, West Virginia. The project is a 20-year, US \$300M renovation project to stabilize and upgrade the dam to current engineering standards. The use of BioBlend lubricants in this project is the perfect example of melding applications (hydraulics, rock drills, gear oils, etc.) and environmental needs (biodegradability, minimally toxic, not bioaccumulative) with high performing, biodegradable lubricants that usually outperform their conventional counterparts in extreme operating temperatures. The project will greatly increase the dam's safety and protect surrounding communities from catastrophic flooding.

Toxicology - A lubricant should be considered MINIMALLY TOXIC, which means the toxicological impact on soil, water microorganisms and higher life forms is minimal upon entry into the environment and throughout the biodegradation process. **Bioaccumulation** - A lubricant should be NON-BIOACCUMULATIVE, indicating that its toxic substances will not accumulate in soil, water microorganisms, and higher life forms. The bioaccumulation of toxic substances can have a devastating impact on the environment and eventually move up the food chain to humans.

The above considerations are driven by the parameters set forth in the US Environmental Protection Agency's 2013 Vessel

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High performance lubricants protecting your equipment & your community

To learn more, please visit bioblend.com, email info@bioblend.com, or call 630.227.1800.

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General Permit definition for Environmentally Acceptable Lubricants (EALs). Many manufacturers claim their products are environmentally-friendly, -conscious, or -responsible, etc. with no actual data to back up their claims. As a result, consumers should consider using lubricants that meet the EPA standards of an EAL in marine and land applications, as many land operating environments can also have an impact on streams, rivers, lakes and sea, if they are not already required to do so. The table below offers lubricant users a guideline for choosing Environmentally Acceptable Lubricants.

EPA's 2013 VGP Criteria for Lubricant Classification as an EAL	
As defined in Appendix A of the 2013 VGP, there are three criteria for a product to be classified as an Environmentally Acceptable Lubricant (EAL)	
EAL Criteria	EPA Recognized Testing (or calculations)
Readily Biodegradable	<ul style="list-style-type: none"> - OECD 301 A-F, 306, and 310 - ASTM 5864 - ASTM D-7373 - OCSPP Harmonized Guideline 835.3110 - ISO 14593:1999
Minimally Toxic	<ul style="list-style-type: none"> - OECD 201, 202, and 203 for acute toxicity testing (ISO/DIS 10253 for algae, ISO TC147/SC5/W62 for crustacean, and OSPAR 2005 for fish, may be substituted) - OECD 210 and 211 for chronic toxicity testing
Not Bioaccumulative <small>(criteria can be based on calculated values as established under testing)</small>	<ul style="list-style-type: none"> - The partition coefficient in the marine environment is log KOW <3 or >7 using test methods OECD 117 and 107 - Molecular mass > 800 Daltons - Molecular diameter >1.5 nanometer - BCF or BAF is <100 L/kg using OECD 305, OCSPP 850.1710 or OCSPP 850.1730 - Field-measured BAF - Polymer with MW fraction below 1,000 g/mol is <1%

For more details ask for BioBlend's white Paper: '[BBWP-BioBlend VGP-EAL Compliance Position Paper.v2.pdf](#)'

Risk Mitigation

As the demands placed on lubricant systems increase, the likelihood of an accidental release of fluids into the environment increases. Increased operating temperatures, pressures and working cycles shorten the life of equipment components and the reality of a lubricant spill becomes a matter of "when" it will happen rather than "if" it will happen.

An effective approach to lowering an organization's Total Cost of Ownership is to choose a lubricant that lowers the risks associated with a lubricant spill, while also protecting the equipment and the environment. This is accomplished by choosing high performance biodegradable lubricants that meet the definition of an EAL since they provide a significantly safer alternative than conventional petroleum and synthetic lubricants. This is especially important in environmentally sensitive areas.

The continued use of conventional petroleum and synthetic lubricants will NOT mitigate an organization's costs associated with cleanup, downtime, remediation and potential fines. The only means to help protect against these costs is to use biodegradable lubricants that meet current EPA definitions for environmental stewardship.

In the event of an oil spill, all federal and state guidelines should be strictly adhered to. It is therefore important, once again, to differentiate conventional petroleum and synthetic lubricants from EALs. Two more things to consider:

- The federal government does not classify biodegradable lubricants as used oil, even after use.
- Many states operate under the same federal guidelines regarding oil spills.

When a spill occurs, governing authorities oftentimes consider the circumstances, type and condition (new or used) of the oil in question. Some may assess lower penalties, fines, and remediation requirements if the oil is a readily biodegradable lubricant that is minimally toxic and does not accumulate in the environment. This can greatly reduce an organization's exposure and risk factors when compared to using a conventional petroleum or synthetic lubricant.

For more details ask for BioBlend's white paper: '[BBWP-The BioBlend Oil Spill Advantage.v2.pdf](#)'

For additional insights on state regulatory viewpoints ask for: '[Oregon DEQ Biodegradable toxicity letter 3 26 12.pdf](#)'

Brand Image / PR

When a lubricant spill occurs, the cost associated with brand image and public relations can have a significant effect on a company's Total Cost of Ownership. A significant amount of time and money is invested in building a company's brand and reputation and the financial and PR impact of an accidental oil spill can have a significant effect on an organization's bottom line and future profitability.

Consider the table below for a conservative snapshot of the financial impact an inadvertent oil spill can have on an organization:

Risk Mitigation Comparison ... 250 gallon oil spill		
Category	BioBlend BioFlo Hyd. Fluid	Conventional Petroleum Hyd. Fluid
Base Oil	Vegetable	Petroleum
Biodegradability	Days (<i>Readily Biodegradable</i>)	Years (<i>Inherently Biodegradable</i>)
Aquatic Toxicity, LC50, ppm	>10,000	(unspecified)
Est. Initial Clean-up Cost for Spill	\$1,000	\$2,500
Est. Damage Liability	\$0	\$30,000-\$40,000
Est. Remediation Costs, 6 mon.	\$0	\$10,000-\$50,000
EST. TOTAL SPEND	\$1,000	\$42,500-\$57,500 (varies by govt.)
Impact on Brand / Public Relations	Minimal (\$0)	Substantial (\$?????)

Price

One final factor to consider when evaluating Total Cost of Ownership and a switch to biodegradable lubricants is the price. Did you know:

- Many biodegradable canola or synthetic based lubricants sell at the same or slightly higher price per gallon as their conventional counterparts?
- In many cases, the value of biobased products can be higher than conventional lubricants when the higher VI, higher flash points and increased lubricity are taken into account.

Petroleum based product pricing is certainly effected by a number of factors in today's marketplace, while the synthetic market is more stable. It is a common belief that we are at all times one world crisis away from exorbitant petroleum pricing that could lead to unmanageable and unpredictable effects on an organization's Total Cost of Ownership.

The biodegradable basestock industry is not plagued by these uncertainties. When you consider the nonexistent or minimal price difference, biodegradable lubricant options are a safer, more manageable choice when evaluating TCO.

Conclusion

When you consider the factors of lubricant performance, reliability, environmental benefits, risk mitigation, brand image/public relations, and price in a Total Cost of Ownership evaluation, it is clear that performance driven, biodegradable technologies are the best choice. The reliability and performance is equal to or even better in some applications than that of conventional petroleum and synthetic fluids, and they offer a number of environmental benefits that can lead to significant savings in the event of a spill.

BioBlend Renewable Resources offers a full line of performance driven biodegradable lubricant technologies to help consumers lower their Total Cost of Ownership. Contact BioBlend or your BioBlend representative today for a professional discussion on how you can effectively integrate these technologies into your operations and start saving money.

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www.bioblend.com (See ad on pg. 11)



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